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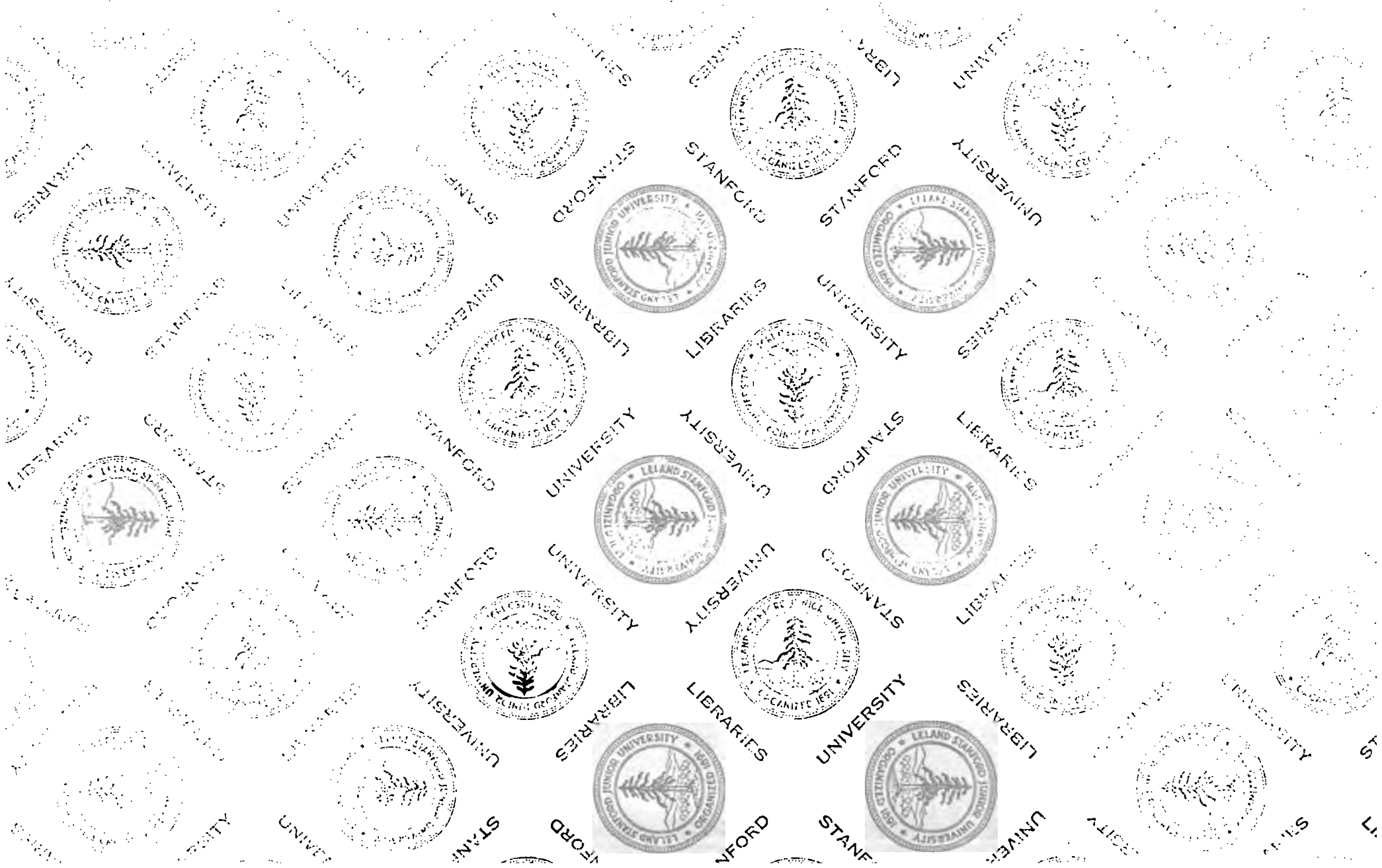

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DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY OF THE TERRITORIES
F. V. HAYDEN, U. S. GEOLOGIST IN CHARGE

PROFILES, SECTIONS

AND OTHER

ILLUSTRATIONS,

DESIGNED TO ACCOMPANY THE FINAL REPORT OF THE

CHIEF GEOLOGIST OF THE SURVEY

AND SKETCHED UNDER HIS DIRECTIONS

BY HENRY W. ELLIOTT.

UNDER AUTHORITY OF THE SECRETARY OF THE INTERIOR

NEW YORK

JULIUS BIEN

1872

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PREFATORY NOTE.

A SMALL edition of one hundred copies of the Profiles and Sections are issued in advance of the text, for the purpose of placing them in the hands of the principal geologists in this country and in Europe. The first edition of two thousand copies, in colors, will be published with descriptive text in about one year. In the mean time every effort will be made, to correct any errors that may appear on further examination of the country.

In the arrangement of the Sections I have followed the order of exploration, grouping those of 1869 together, succeeded by those of 1870 and 1871, in regular order. A series of maps, representing the geological

[redacted]

ns, with suitable colors, will accompany the final report.
l serve to show more clearly the lines of travel across the
ich the sections were taken.

spirited and accurate sketches of MR. ELLIOTT have be
rily reproduced by the Photolithographic process of MR.
New York.

F. V. HAYDEN,

UNITED STATES GEOLOGI

[redacted] was originally intended
that one of the volumes (vol IV) of
the series of Reports of the United
States Geological Survey of the Territo
it was never published. The w
out of print immediately and is o
in few libraries.

ERRITORIES 1869.

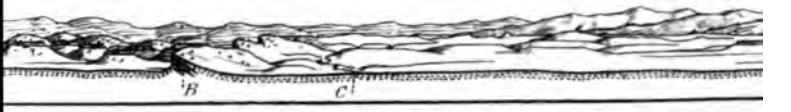
CHEYENNE TO DENVER (100 MILES) AT

A. Denver.- B. Hog Backs, Turkey & Bear Creeks.- C. Basaltic, Mesas Golden City.- D
H. St Vrains Creek.- I. Hog Backs.- J. B

A. The Arkansas Crossing, Cañon City at foot
F. Fountain Qui Bruit.- G. Red Beds S

FROM CAM

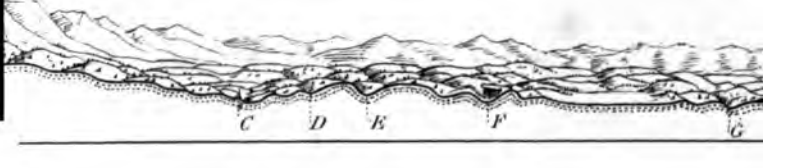
A. Raton Peak, Raton Mts.- B. Purgatoire River.- C. Trinidad & Coal Beds.
J. Sangre de Christo Pass.- K. S. St Charles.- L. North St Charles.- M. Wet Mts.

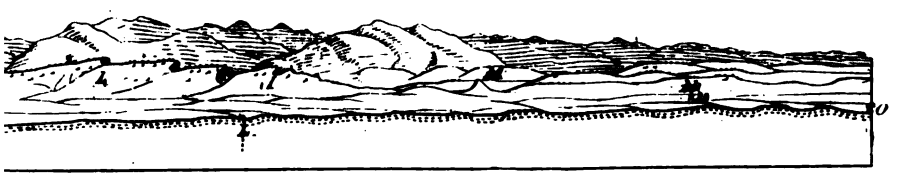


A. San José.- B. Hog Backs Cut nea

FROM SAN

A. Placiere Mts B. Gallisteo River & Marls.- C. Santa Fé.- D. Apache P



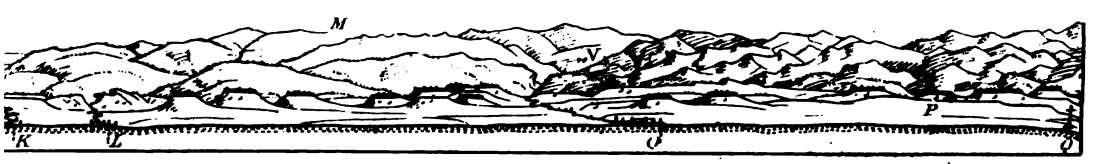


Looking West.

F. Terraces at foot of Mt. Ct. Long's Peak.
nd Butte.- N. National Park.- O. Cheyenne.

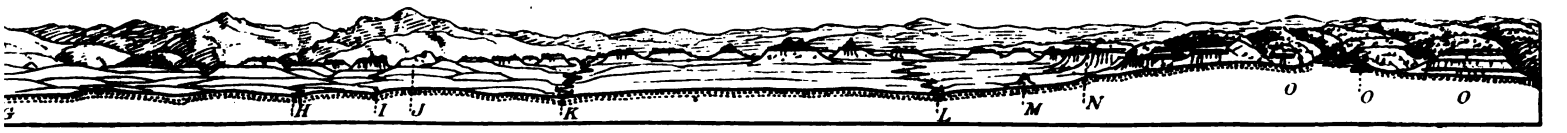
ARKANSAS.

v.- D, Buttes with limestone caps or sandstone grayish white.- E, Pike's Peak.-
wson's Butte.- J, Red Beds &c. Platte Cañon.- K, Platte Cañon.- L, Denver.



D.

- G, Apishpa Creek.- H, Huerfano Butte.- I, Huerfano River.-
ng.- P, Coal - Q, Camp on Arkansas.

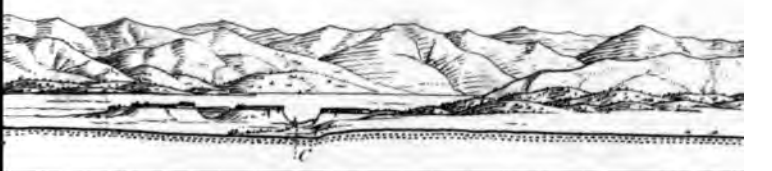


S TO SAN JOSÉ.

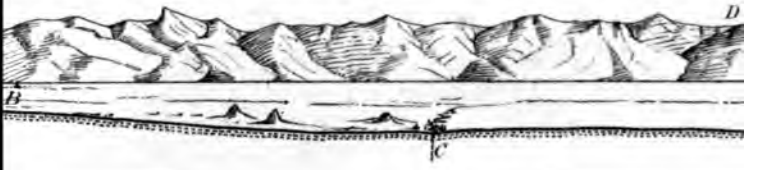
ano extinct.- G, Ocatá Creek.- H, Rayada Creek.- I, Cimmaron Creek.- J, Manwells.-
e.- N, Sandstones & Shales.- O, Raton Hills & Coal Beds.

F Purgatoire Springs.- G, San José.

EY OF THE TERRITORIES 1869.

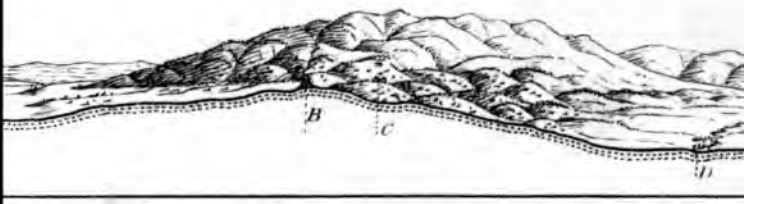


A, Ft Garland.- B, Rio Trenchera.- C, Culeb



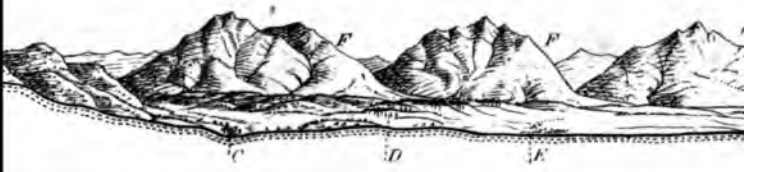
FROM CA

A, Kirbers Ranche, Poncho Pass.- B, Warm Sulphur Spring



BETWEEN THE PONCHO PASS

A, Salt works South Park.- B, Summit of Trout Creek Pass.- C, Basaltic piles.- D, Ar

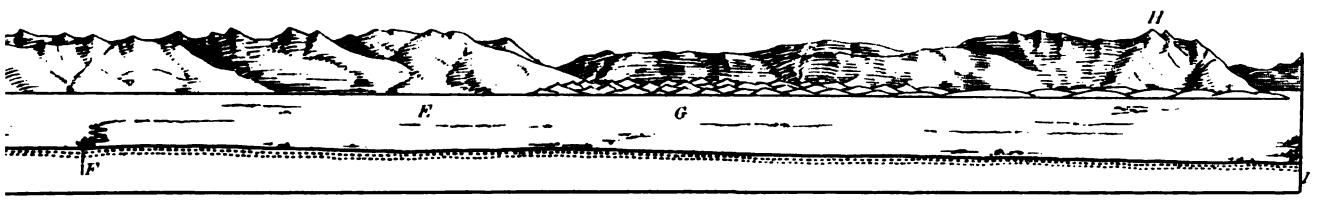


BETWEEN THE PONCHO PASS

A, Salt works South Park.- B, Summit of Trout Creek Pass.- C, Basaltic piles.- D, Ar

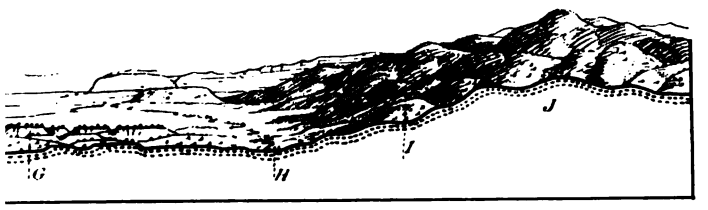
ding East.

on Mountain sides.- F. Arroyo Hondo.- G. Taos - H. Titos M^t.



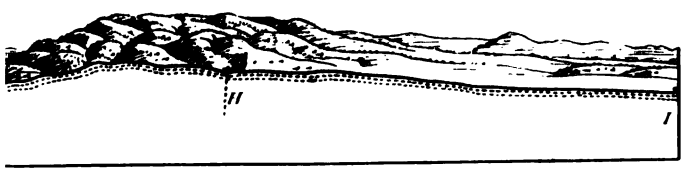
CHE IN PONCHO PASS. Looking East.

amp & Lake - F. Trout Creek - G. Sand Hills &c. at Moscu Pass. - H. Old Baldy. - I. Camp on the Rio Grande.



Looking East.

- H. Little Arkansas - I. Warm Spring - J. Summit Poncho Pass.



Looking West.

- H. Little Arkansas. - I. Warm Spring - J. Summit Poncho Pass

E SOUTH OF THE SALT WORKS.

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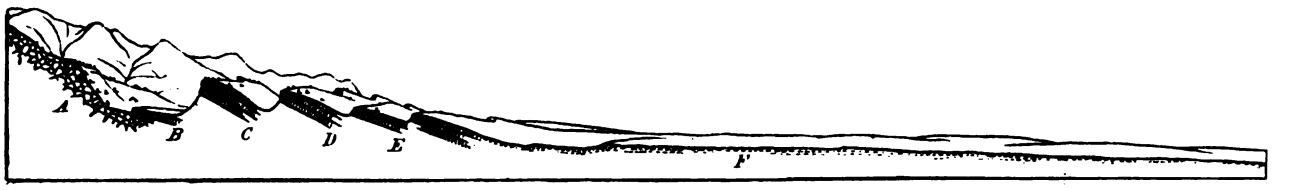
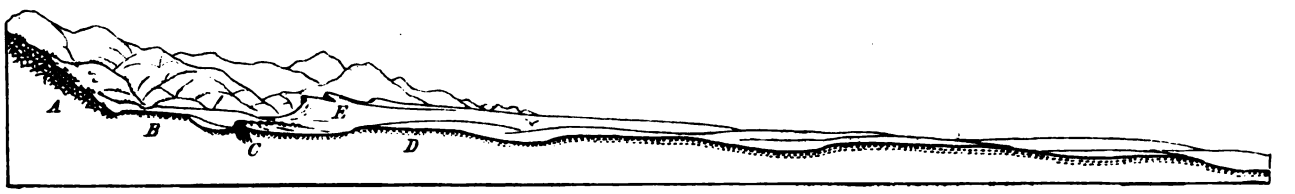


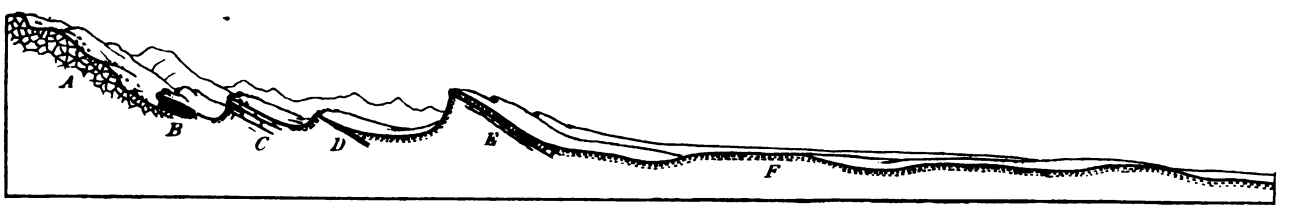
CACHE A LA POUDRE. Looking North.

A, Granite, Rocky Mountains. B, Silurian Limestones.- C, Carboniferous Limestones, capped with Triassic.- D, Lower Cretaceous N°1. E, Cretaceous N°2 and 3.- F, Cretaceous N°4 and 5 passing up into the Lignite Tertiary, Rolling Plain.



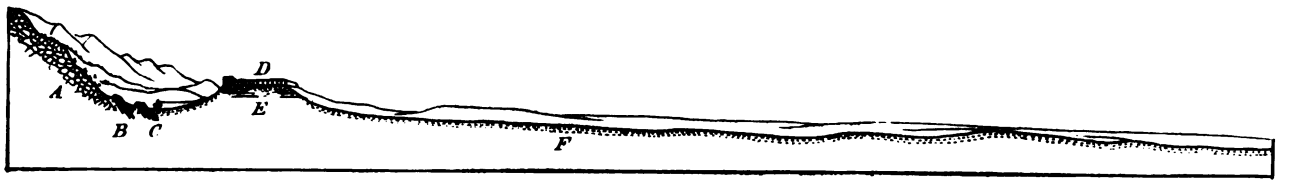
St. VRAINS. Looking North.

A, Granites, foot of Long's Peak.- Benches covered with local drift, outcropping of Lower Tertiary Sandstone.- C, Lower Tertiary Sandstones.- D Lower Tertiary, covered with a thick deposit of local drift.- F, Ridges of Carboniferous Limestones, capped with Triassic on Big Thompson.



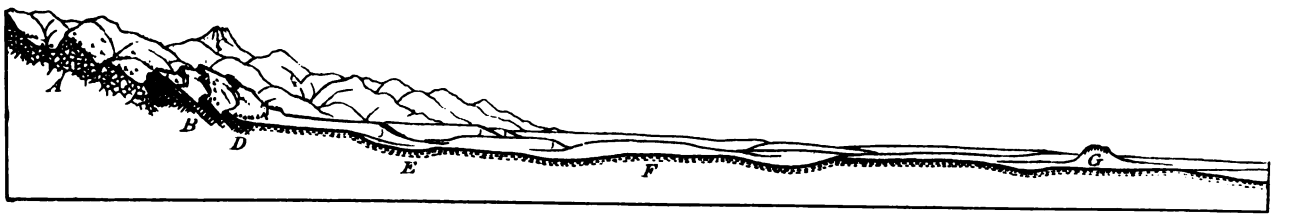
BEAR CREEK.

A, Granite.- B, Red Sandstones Triassic.- C & D, Triassic passing into Jurassic.- E, Lower Cretaceous N°s 1 & 2.- F, Upper Cretaceous, passing into Lower Tertiary grassy plain.



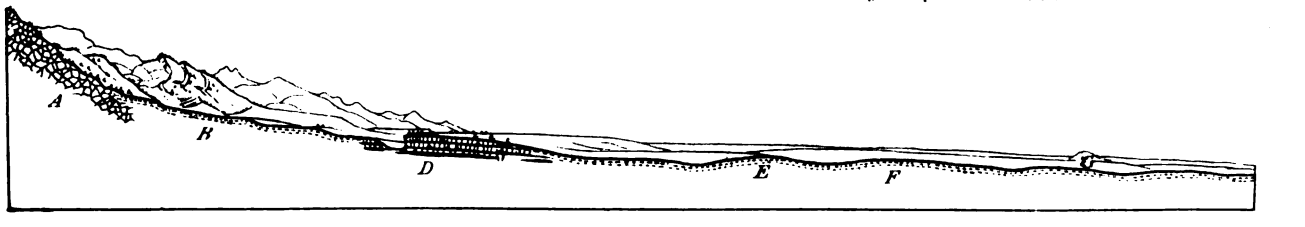
CLEAR CREEK.

A, Granite.- B, Red Sandstones.- C, Lower Tertiary - D, Basalt cap of Mesa at Golden City.- E, Lower Tertiary.- Plains as usual.



SOUTH BOULDER.

A, Granites, Rocky Mountains. B, Red Sandstones partially metamorphosed.- C, Long's.- D, Red Beds capped with Lower Cretaceous.- E, Benches underlaid by Upper Cretaceous.- F, Plains underlaid by Lower Tertiary.- G, Dyke at Valmont.



MARSHALL'S COAL MINES.

A, Granites.- B, Grass covered benches underlaid by Cretaceous.- C, Red Sandstones resting on Granites at South Boulder.- D, Coal Strata Lower Tertiary.- E & F, Plains.- G, Dyke at Valmont.

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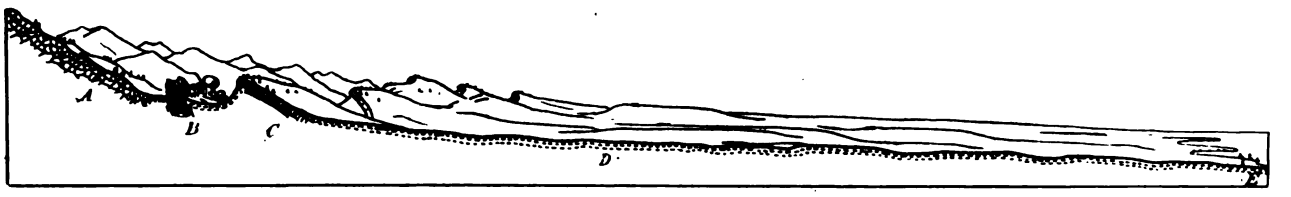
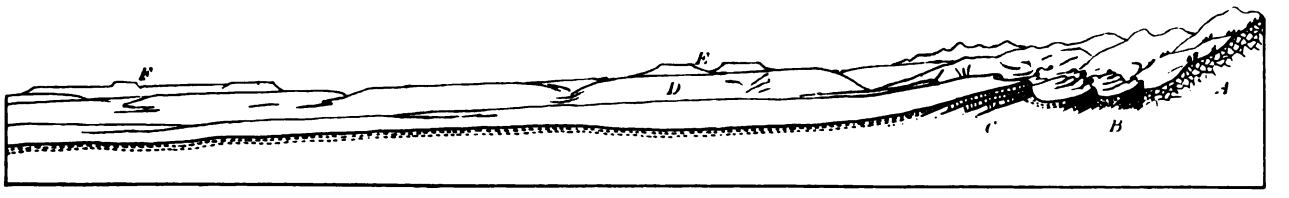


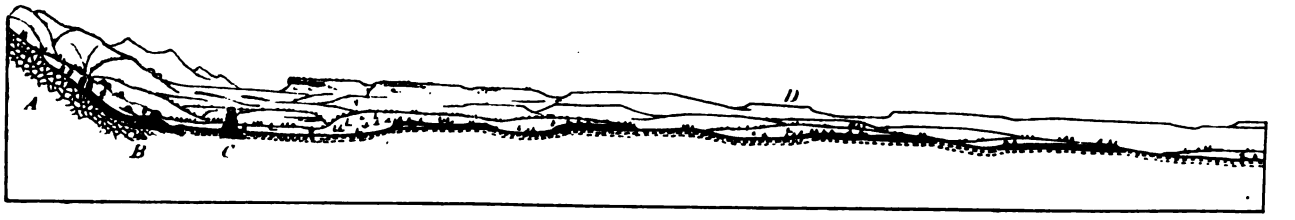
SOUTH PLATTE Looking North.

A, Granites.- B, Brick Red Sandstones.- C, Jurassic capped with Lower Cretaceous.- D, Upper Cretaceous passing into Lower Tertiary jutting up against the metamorphic rocks.- E, Rawson's Butte capped with Basalt.- F, High divide Monument Creek Group.



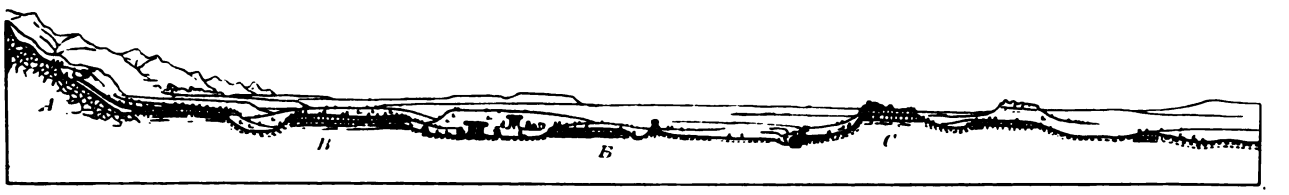
SOUTH PLATTE. Looking South.

A, Granites. - B, Brick Red Sandstones. - C Jurassic capped with Lower Cretaceous. - D, Upper Cretaceous passing into Lower Tertiary.



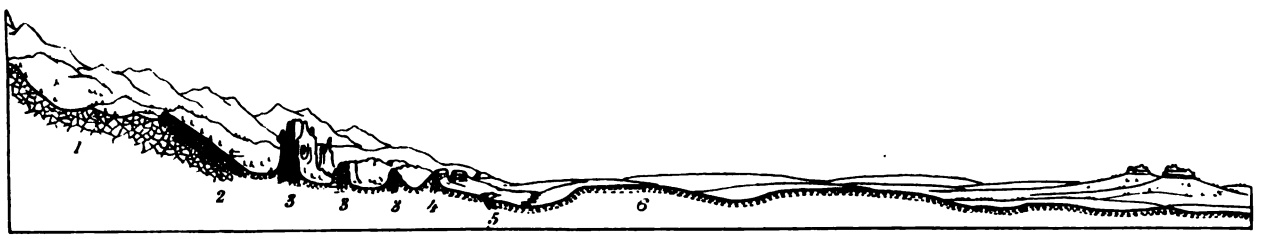
CHERRY CREEK DIVIDE. Looking North.

A, Granites.- B, Brick Red Sandstones lying high up on the Granites. C, Miocene Tertiary. Monument Creek Group. High Divide between waters of the Platte and Arkansas. Monument Creek Group.



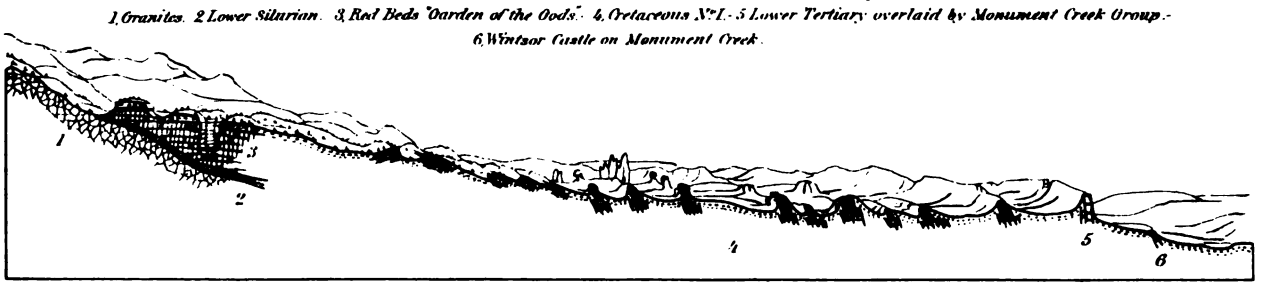
MONUMENT CREEK. Looking North.

A, Granites - B, Monument Creek Group resting on Granites and extending into the plain.- C, Red Beds (Triassic.)



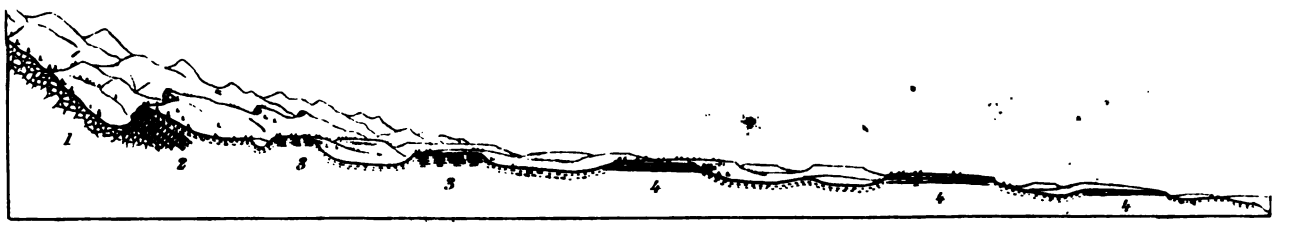
CAMP CREEK. Little Garden of the Gods.- Looking North.

1, Granites. 2 Lower Silurian. 3, Red Beds "Garden of the Gods". 4, Cretaceous No I.- 5 Lower Tertiary overlaid by Monument Creek Group.- 6, Windsor Castle on Monument Creek.



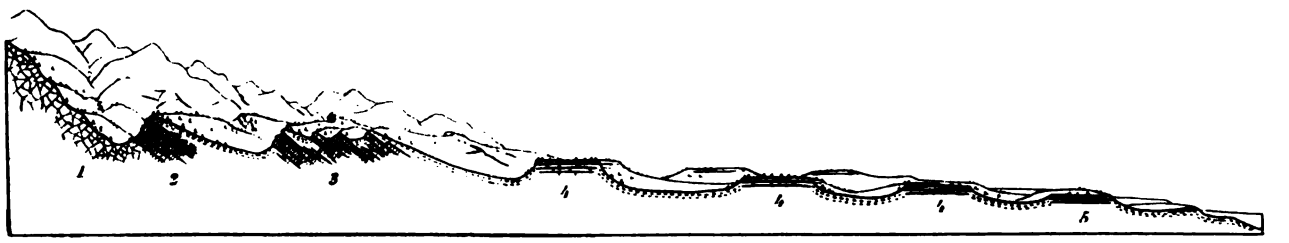
COLORADO CITY. Looking North

1, Granites.- 2 Red Syenite.- 3 Silurian.- 4, Red Beds lying high up on the Metamorphic.- 5, Cretaceous No I.- 6, Lower Tertiary overlaid by Monument Creek Group.



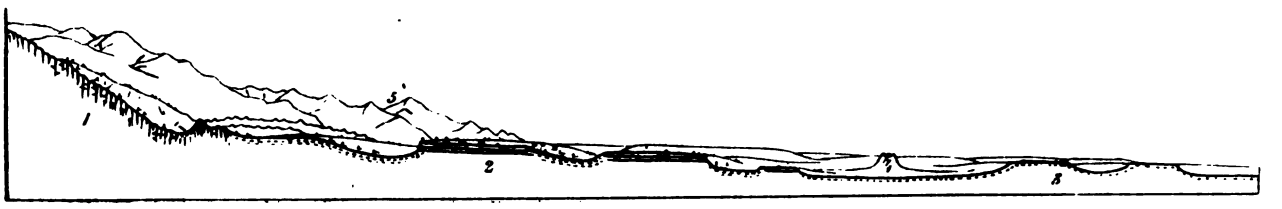
RED CREEK. Looking North.

1, Granites, Wet Mts - 2, Red Beds.- 3, Lower Cretaceous.- 4, Cretaceous N°3.



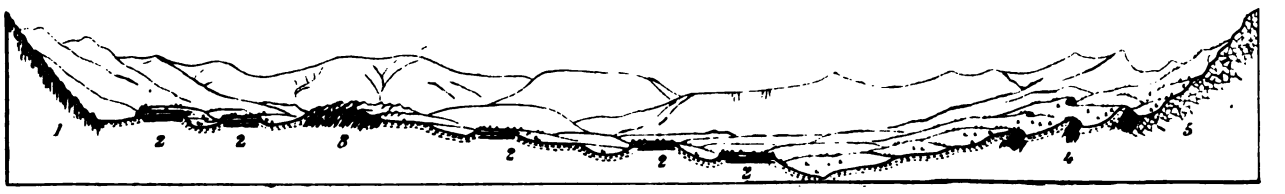
St CHARLES. Looking North.

1, Granites, Wet Mts. 2, Carboniferous.- 3, Red Beds.- 4, Cretaceous N°1.- 5, Cretaceous N°3.



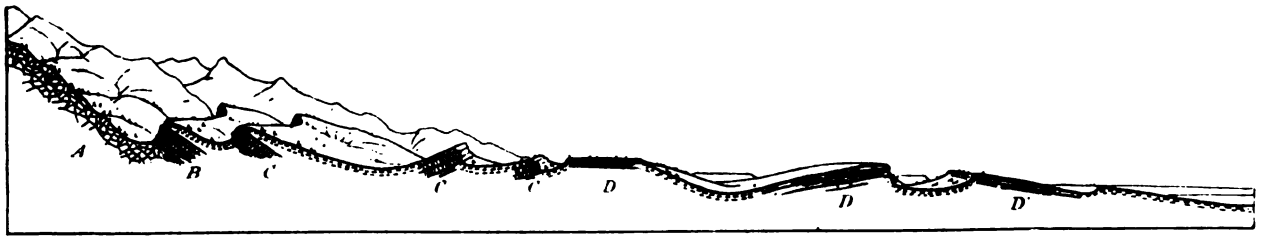
HUĒRFANO RIVER. Looking North.

1, Basalt.- 2, Lower Cretaceous - 3, Upper Cretaceous.- 4, Huerfano, Dike or Butte - 5, Wet Mts, Granites to the North.



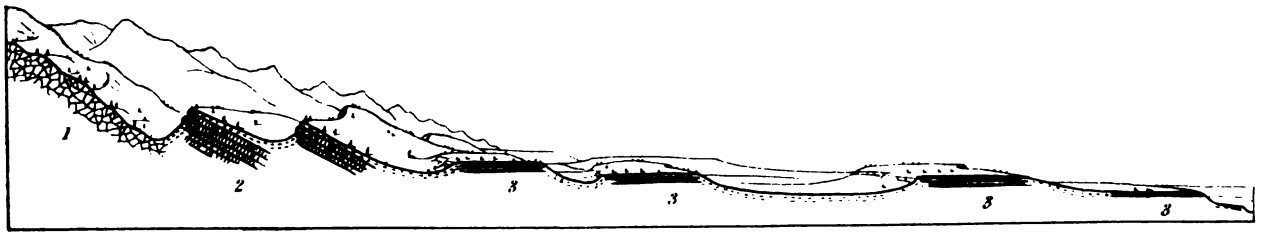
SPANISH PEAKS TO WET MTS Looking West.

1, Basalt, Spanish Peaks 2, Cretaceous Nos 1 and 2.- 3, Basalt Dike. 4, Red Beds.- 5, Granites Wet Mts



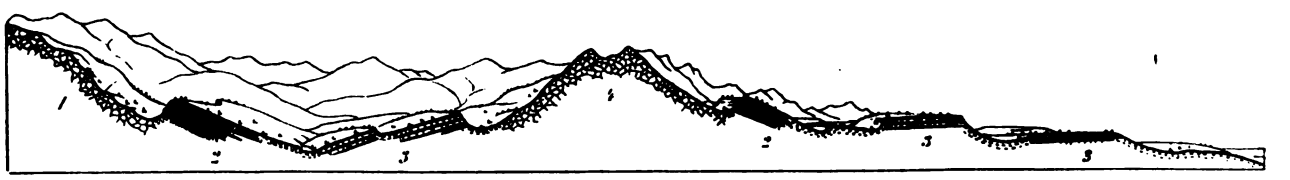
SOUTH ST CHARLES. Looking North.

A, Granite, Wet Mts.- B Red Beds C, Triassic and Cretaceous N°1.- D, Upper Cretaceous running out into plains.



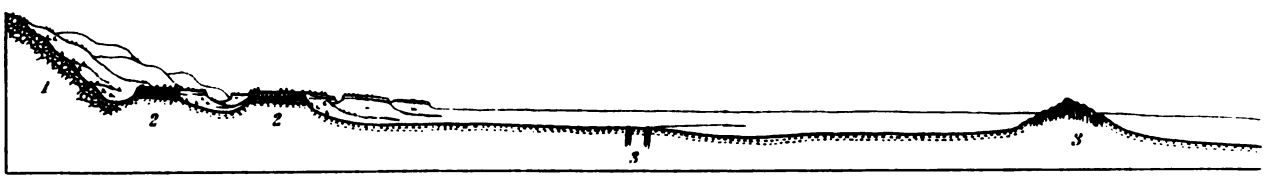
GREENHORN RIVER. Looking North.

1, Wet Mts Granites - 2, Red Beds - 3, Lower Cretaceous Nos 1 and 2 extending into plains.



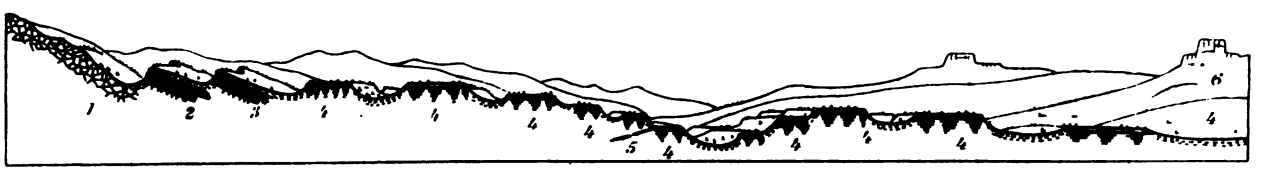
ACROSS HUĒRFANO RIVER.

1, Granites, near Spanish Peaks.- 2, Red Beds.- 3, Coal Beds underlaid by black Cretaceous Clays.- 4, Granites, with outflows of igneous material. Sangre de Christo Pass.



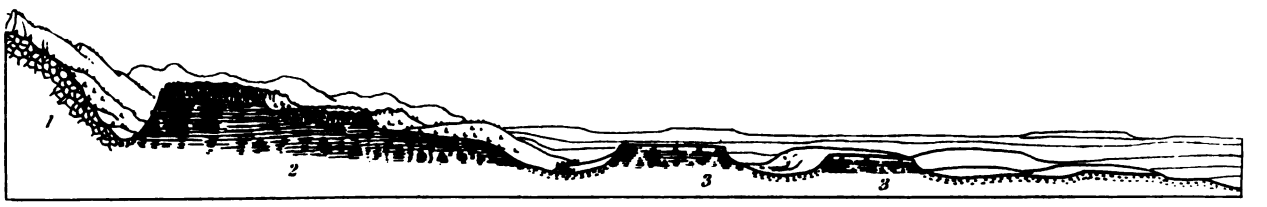
APISHPA CREEK. Looking North.

1, Granites, Sierra Madre Range.- 2, Coal Strata, underlaid with Cretaceous № 2, sometimes capped with Basalt and Carboniferous.- 3, Dikes Basalt.



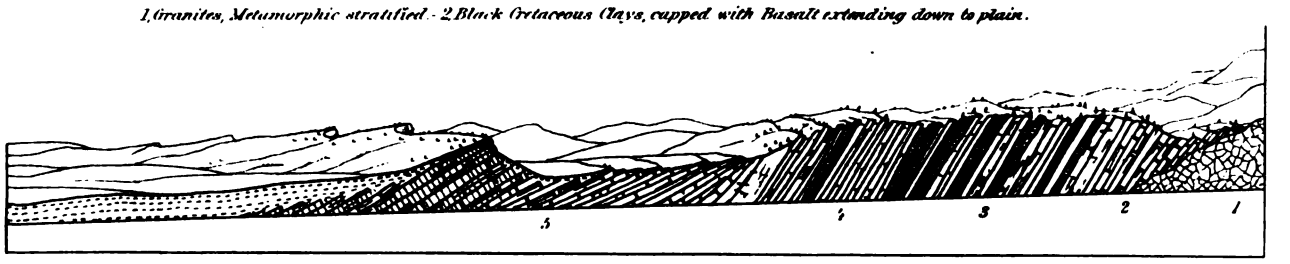
PURGATORY CREEK. Looking North.

1, Granites, Sierra Madre.- 2, Carboniferous.- 3, Red Beds.- 4, Coal Beds.- 5, Coal Seam in position, underlaid with Cretaceous Clay.- 6, Fishers Peak (Basaltic Cap).- 7, Raton Peak (Basaltic Cap).



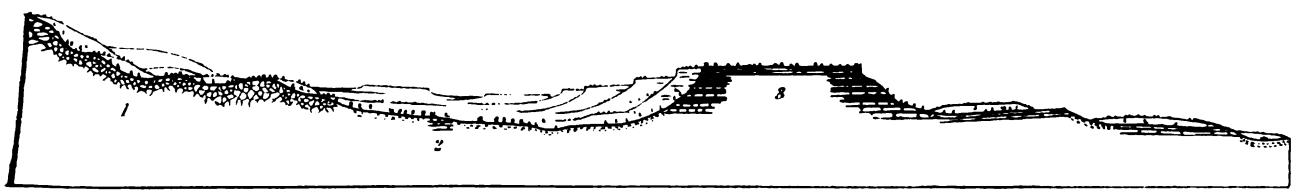
LITTLE CIMMARRON.

1, Granites, Metamorphic stratified.- 2, Black Cretaceous Clays, capped with Basalt extending down to plain.



GALLINAS RIVER. Looking South.

1, Granites (Gallinas Cañon.) 2, Carboniferous Rocks.- 3, Red Beds.- 4, Jurassic.- 5, Cretaceous № 1 passing up into №s 2, 3, 4 & 5 in the plains.

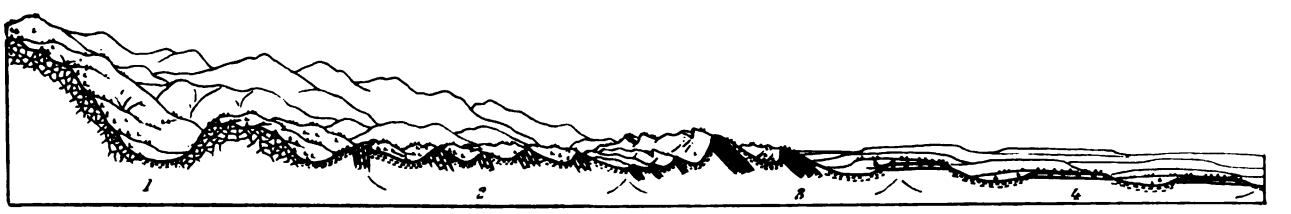


PARYITOS SPRINGS. Looking North.

1, Granites.- 2, Carboniferous Beds.- 3, Carboniferos Beds passing up into Red Beds.

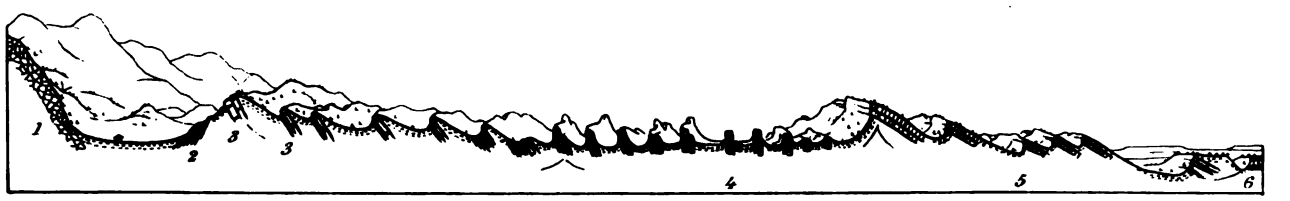
Mesas or table lands of New Mexico.

[redacted]



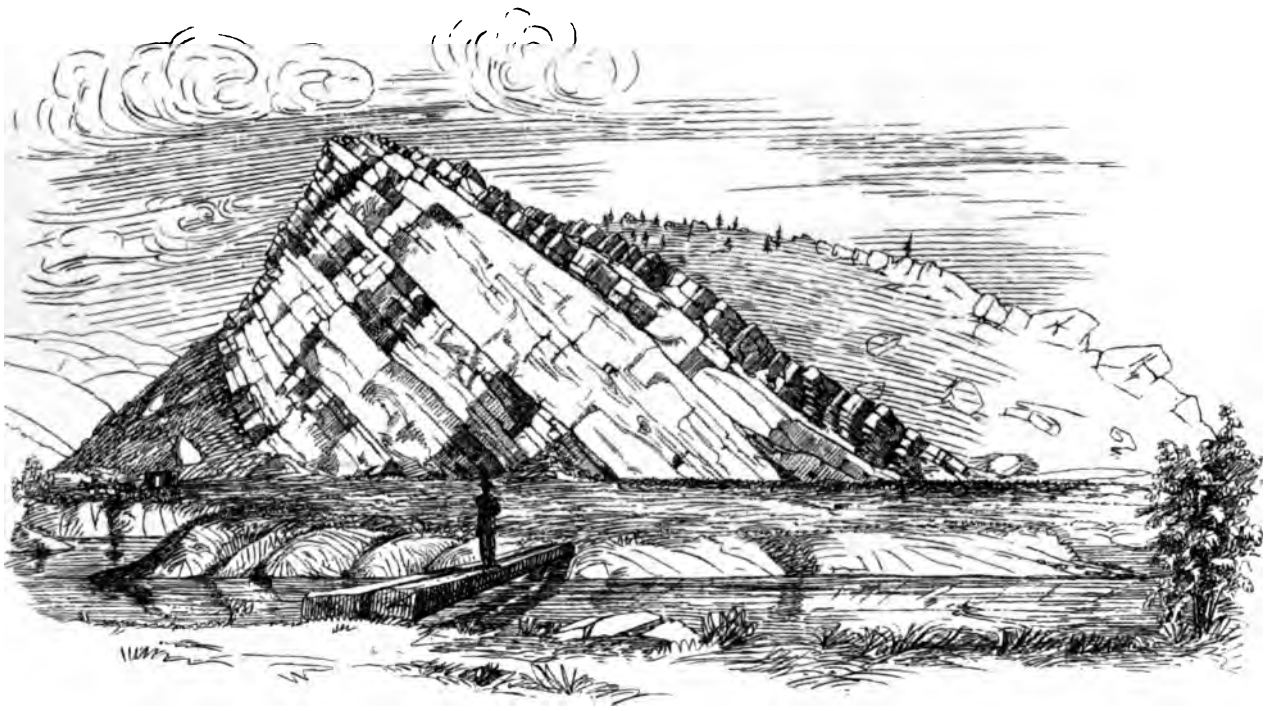
COYOTE CREEK. Looking North.

1, Granites. - 2, Carboniferous - 3, Red Beds Jurassic. 4, Lower Cretaceous N°1 underlaid with Red Beds &c.



MORA CAÑON. Looking North.

1, Granites. - 2, Gneiss and White Quartz. - 3 Carboniferous Beds. - 4, Red Beds. - 5, Jurassic. - 6, Cretaceous N°1.



MORA CAÑON

near Romero's Ranche Carboniferous Limestone

[redacted]

Burleigh Tunnel
above Georgetown, a Mendota lode.

Mono - Clinal
between Idaho and Georgetown on road, Gneiss.

Little Garden of the Gods.
1. Red Sandstones, Triassic - 2. Silurian Limestones.

Central City, Col., joints

On Road from Junction to Central, Col.

Gneiss & Feldspathic Seams on road from Idaho to Black Hawk.

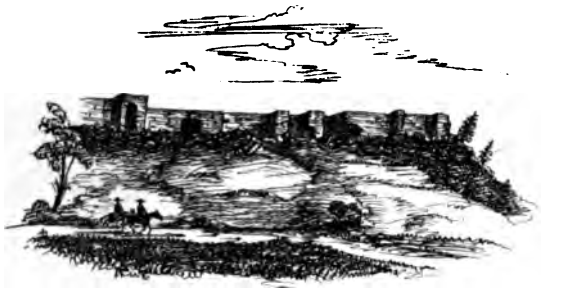
Lode Walls Central City Col.

Red metamorphic Quartzites on Road from Central, to Denver, Col.

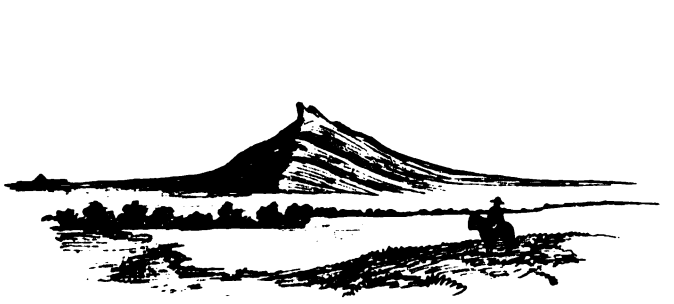
Gneissic Peak near Nicholson's Ranche between Kenosha House & Junction, Col

Vertical Clearage E of N between Kenosha Ho. and Junction, Granites.

Granites overlaid by Red Sandstone near Springs at foot of Pike's Peak.



Turkey Creek Sandstones Fortifications, Tertiary between Cal City & Union



Dike on Plains between Rio Cucharas & Trinidad City.

Columnar Basalt South Raton Pass New Mexico.

Buttes on plain, North of Trinidad.
1, Basalt: 2, Sandstones passing by to Coal Beds: 3, Clays Cretaceous 2, 3, 4.

Granites on Fair Play Road.

[redacted]

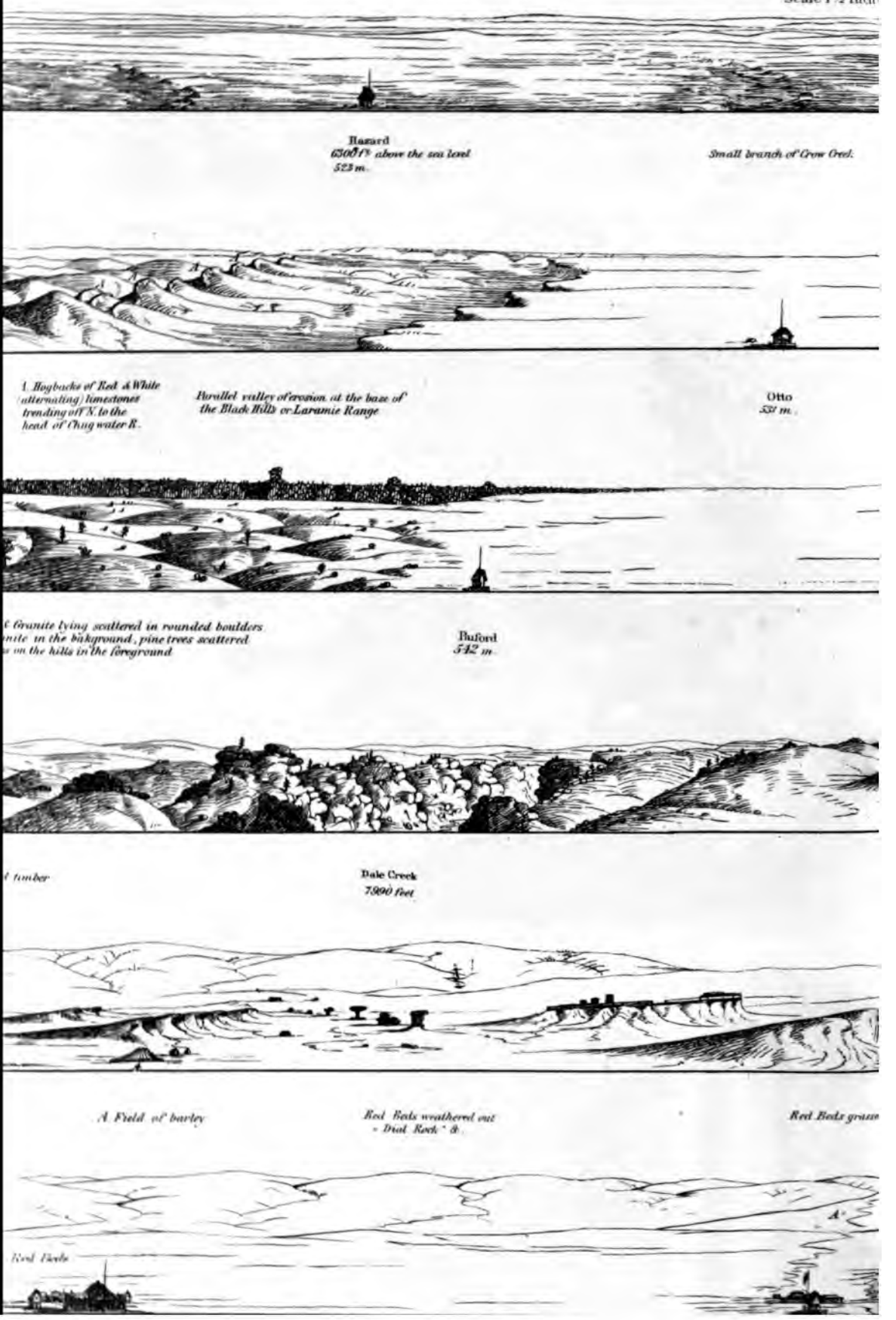
HE TERRITORIES 1870

PROFILE ALONG THE LINE

from Cheyenne to Salt

Broad rolling grassy plains, white

Scale 1 ½ inch


Hazard
6306 ft above the sea level
523 m.
Small branch of Crow Creek.
1. Hogbacks of Red & White (alternating) limestones trending off N. to the head of Chug water R.
Parallel valley of erosion at the base of the Black Hills or Laramie Range
Otto
531 m.
Granite lying scattered in rounded boulders
nite in the background, pine trees scattered
on the hills in the foreground
Buford
542 m.
timber
Dale Creek
7,990 feet
A Field of barley
Red Beds weathered out
"Dial Rock" &
Red Beds grass
Red Beds

E OF UNION PACIFIC R.R.

PL. XII

Lake Valley N. Side

Rivr Tertiary. U, per Miocene.

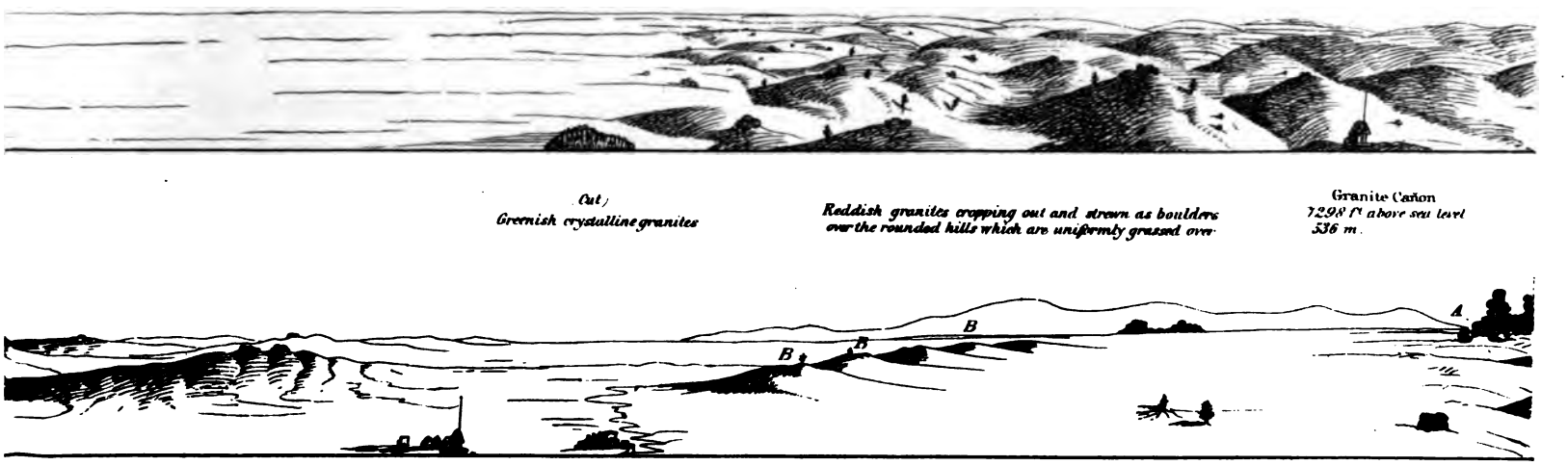
to the mile.

Rolling prairie Country, uniformly grassed over - no exposure of underlying beds

Crow Creek
A. Q. M. Depot
B Ft Russell -

Cheyenne
5921 feet above sea level
516 m. West of Omaha

Coarse pebbly conglomerate sandstone, brown, horizontal and only slightly exposed. These mounds & hillrocks in true proportion are only a little raised above the prairie level



Cut)
Greenish crystalline granites

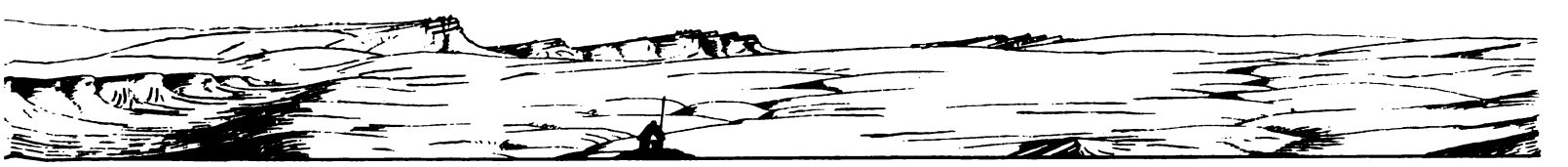
Reddish granites cropping out and strewn as boulders over the rounded hills which are uniformly grassed over

Granite Cañon
7298 ft above sea level
536 m.

Sherman
8235 feet
highest point on the Route
549 m.

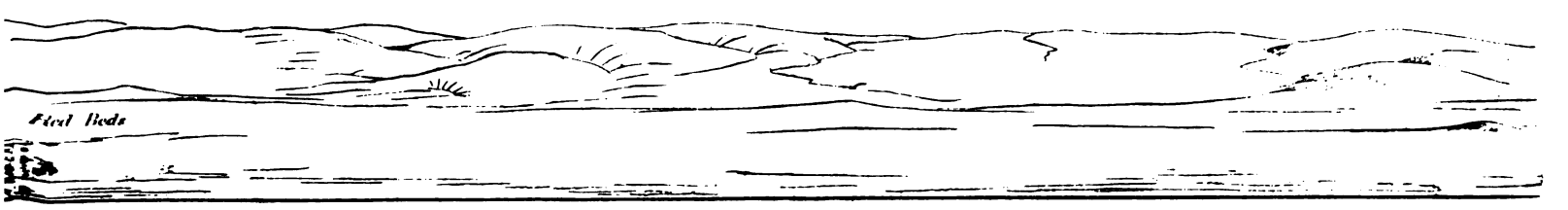
B. Granite Knolls - abundant grass - Cacti -, and occasionally trees

A. Skull rock



Cut
Harney
558 m

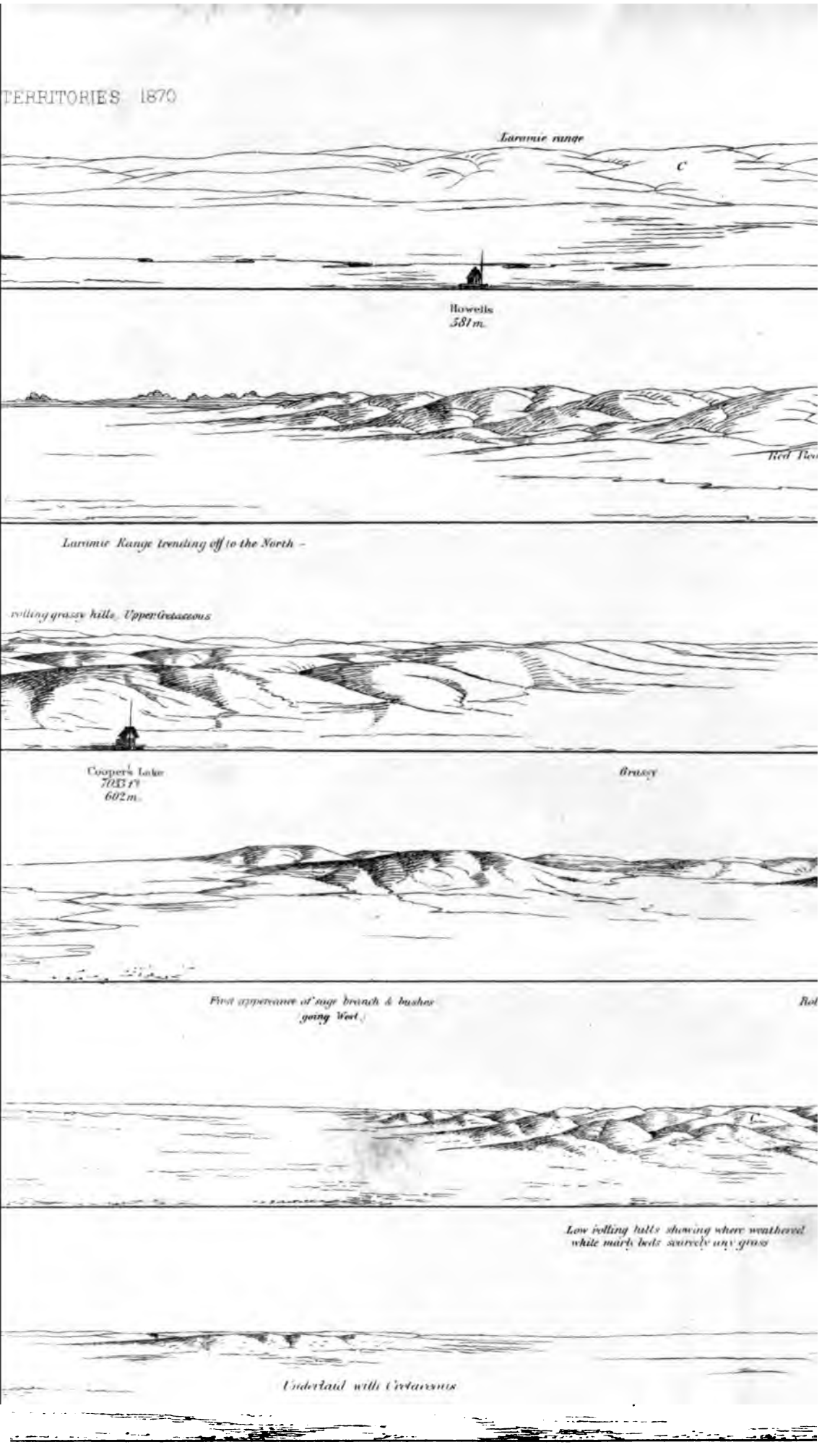
Cut -
limestone
Red Beds & White lapping upon the Dale Creek granites

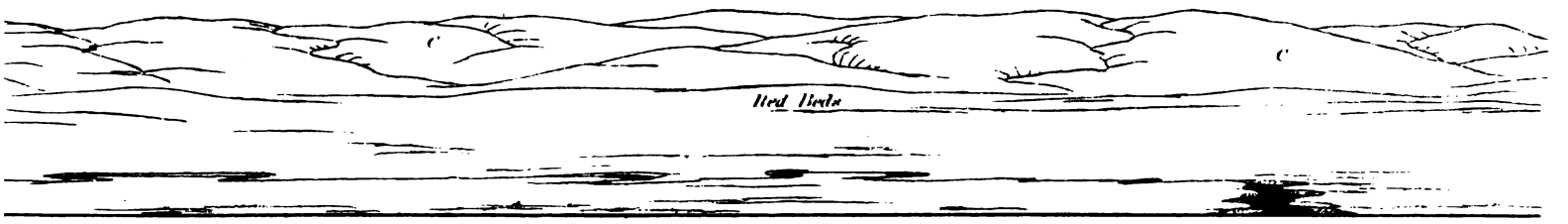


Red Beds

Laramie Range rising gradually from the plains eight to ten miles distant

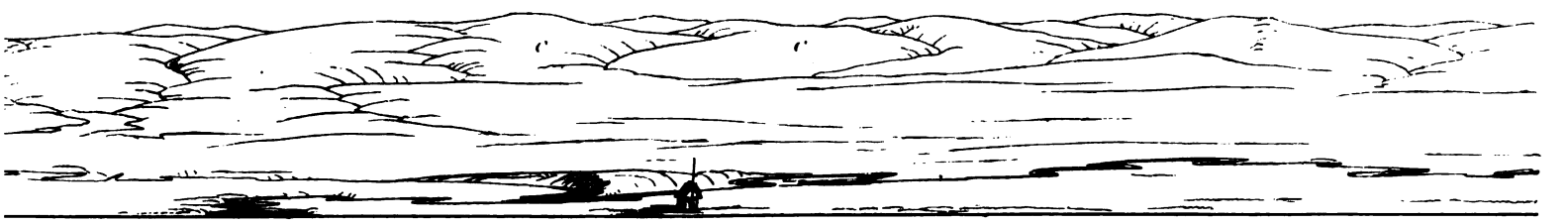
[redacted]


TERRITORIES 1870
Laramie range
C
Howells
581 m.
Laramie Range trending off to the North –
rolling grassy hills Upper Cretaceous
Cooper's Lake
703 ft
602 m.
Fraser
First appearance of sage branch & bushes
going West
Low rolling hills showing where weathered
white marly beds scarcely any grass
Underlaid with Cretaceous



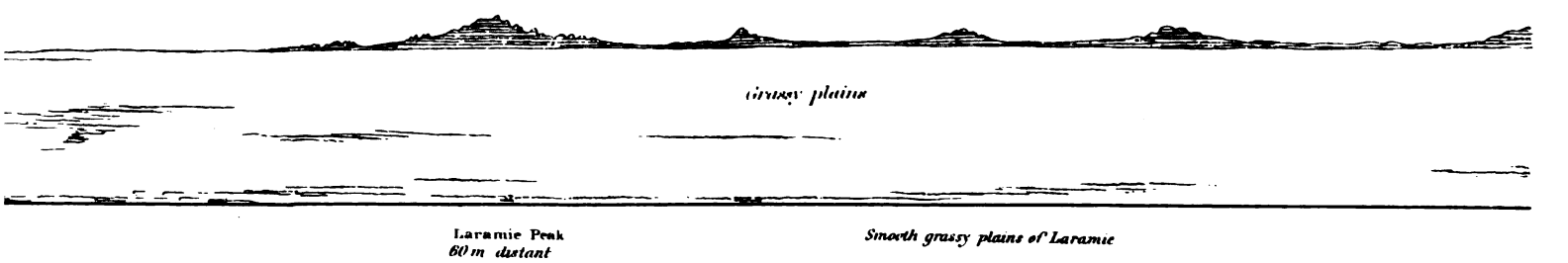
Laramie Range rising gradually from the level plains – 8 to 10 m distant sheep & cattle range here all winter

Big Laramie R
No timber on its banks clear hard gravelly bed



Little Laramie R.

Wyoming
7065 ft
587 m.



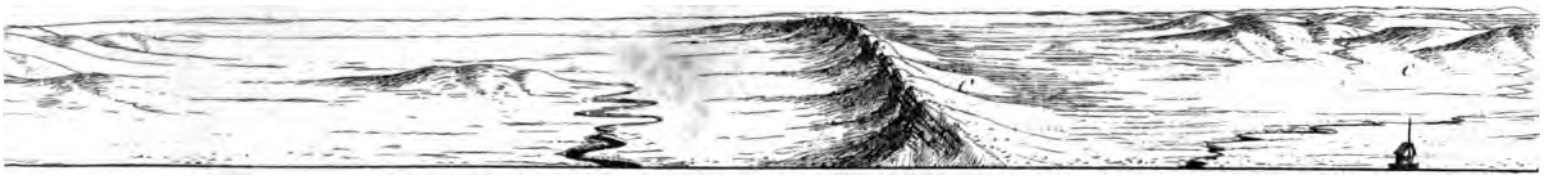
Laramie Peak
60 m distant

Smooth grassy plains of Laramie

Stony benches thinly grassed

Cut
drabclays & shales

Lookout Station
7163 ft
606 m

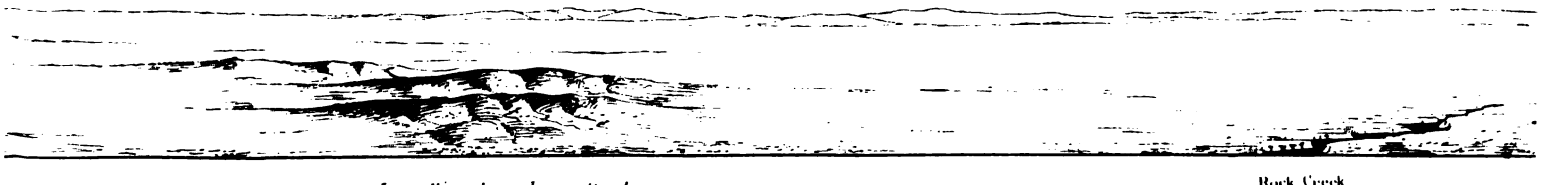


Creek

Hog back of drab & rusty sandstones
cut by R R

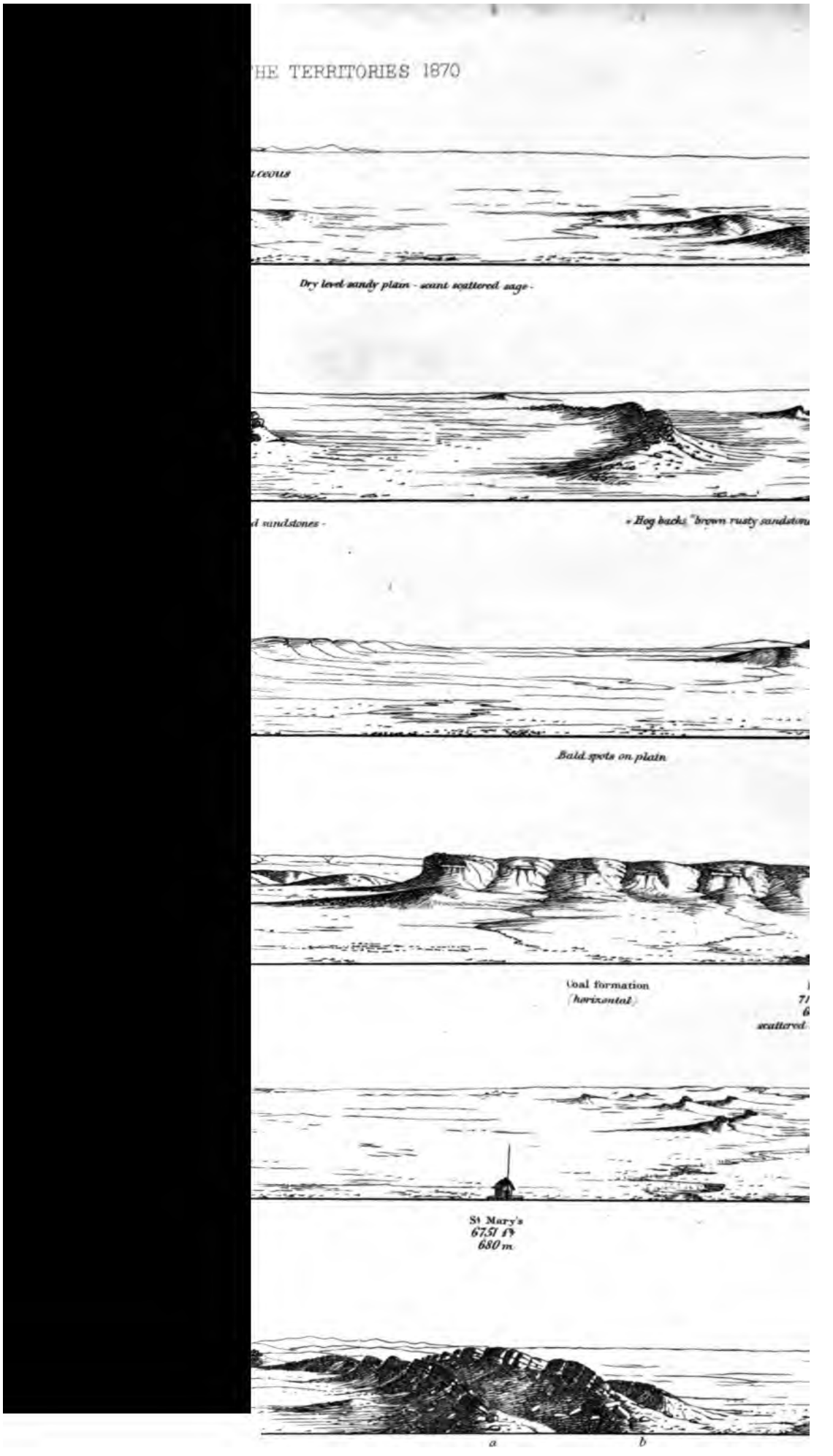
grass thin & scattered

Mines
614 m

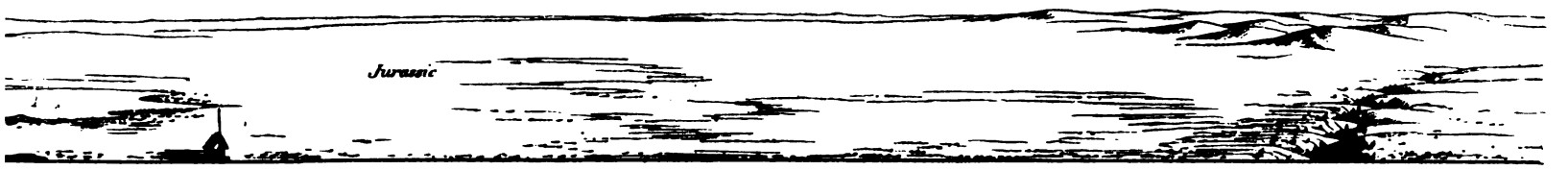


Low rolling plain dry scattered sage

Rock Creek
Scattered sage no grass



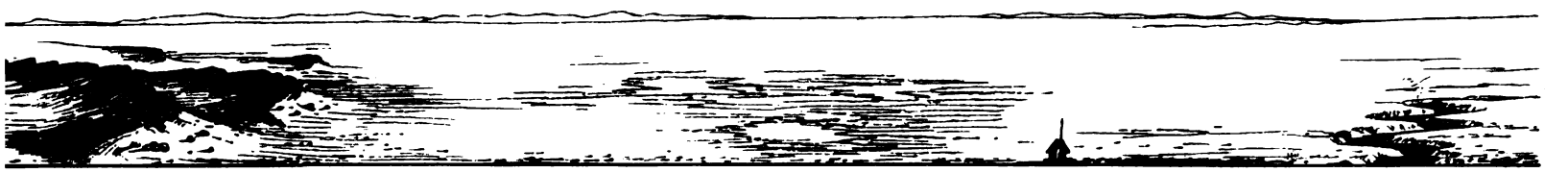
a White ash grey sandstones



A Lake Como

Como
7 088 feet
638 m.

Dry Valley with
stunted pines



Little ornamental grass

Low close growing sage with
bald spots on the plain

Medicine Bow
6688 ft
645 m.

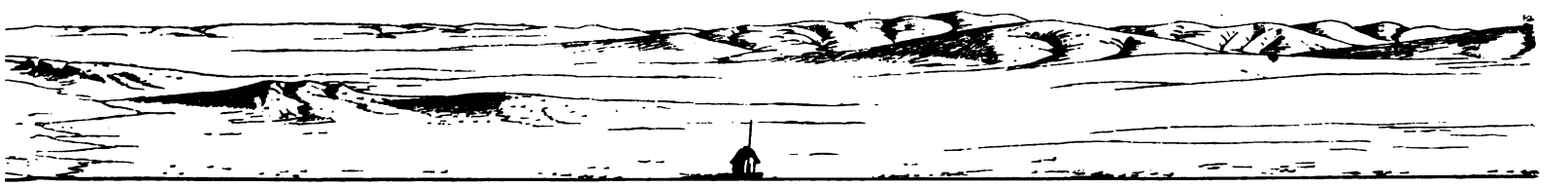
Medicine Bow R.

Carbon coal shaft
6949 ft
656 m.

Undulating sandy plain
Close low growing sage

Sage plain with bald spots
Uniform thick sage

Cut
Pebbly marls buff color gray band



Dana
67.5 m

Sage and sparse grass

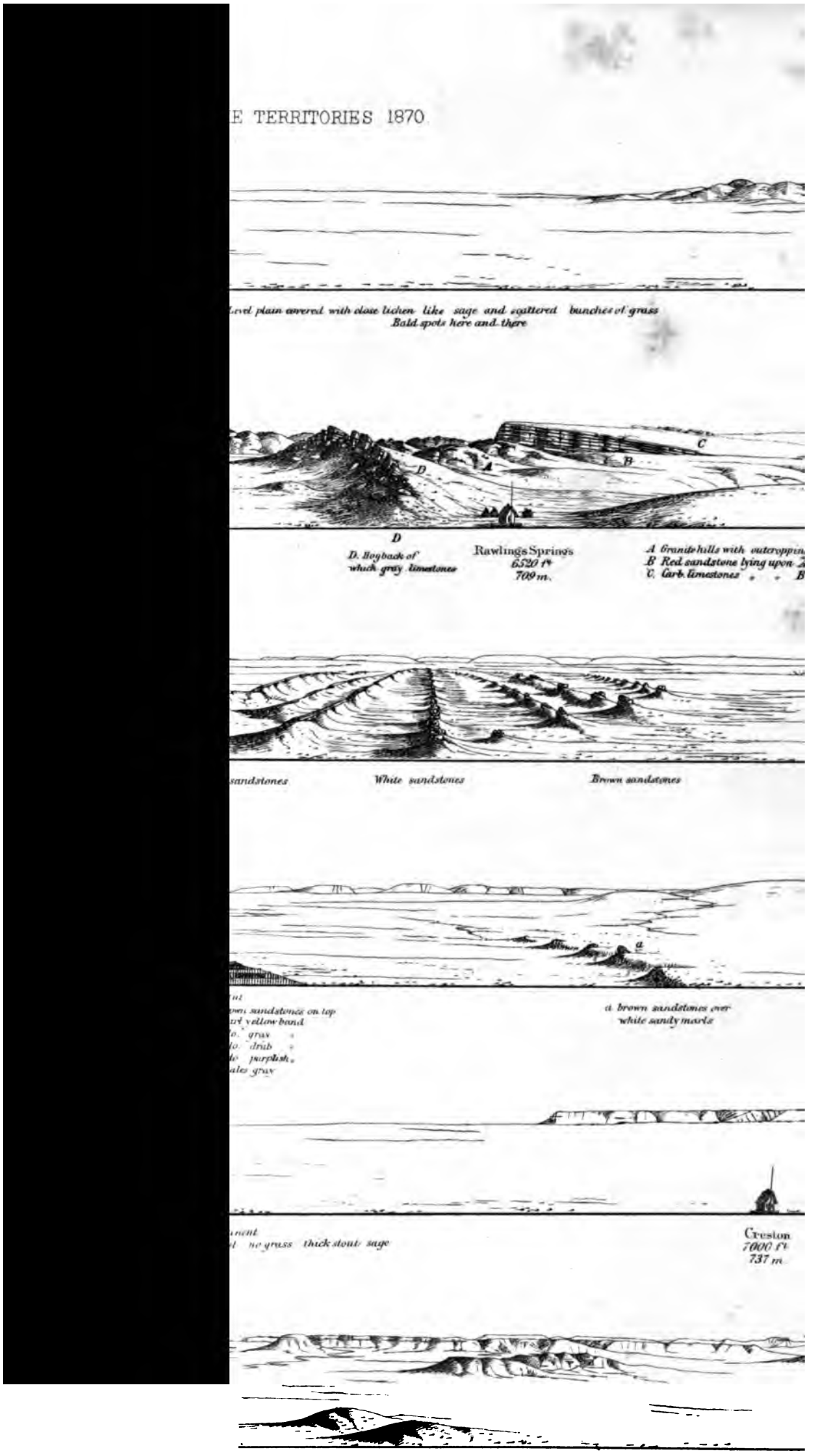
Rusty brown sandstones

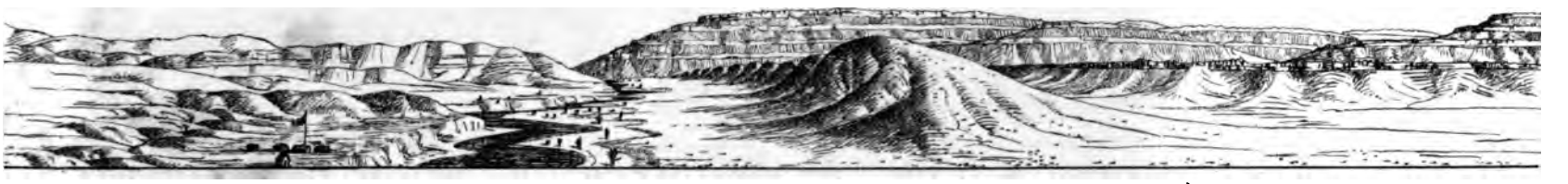
Whitish limestones with
occasional dark seam

Shaley sandstones
Whitish gray

A portion of these beds is Cretaceous passing up into the Coal Series Either upper Cretaceous or lower Tertiary

[redacted]


E TERRITORIES 1870
Level plain covered with close lichen like sage and scattered bunches of grass
Bald spots here and there
C
B
A
D
D
D. Hogback of
which gray limestones
Rawlings Springs
6520 ft
709 m.
A Granite hills with outcroppin
B Red sandstone lying upon
C. Carb. limestones
sandstones
White sandstones
Brown sandstones
a
a brown sandstones over
white sandy marls
Creston
7000 ft
737 m.



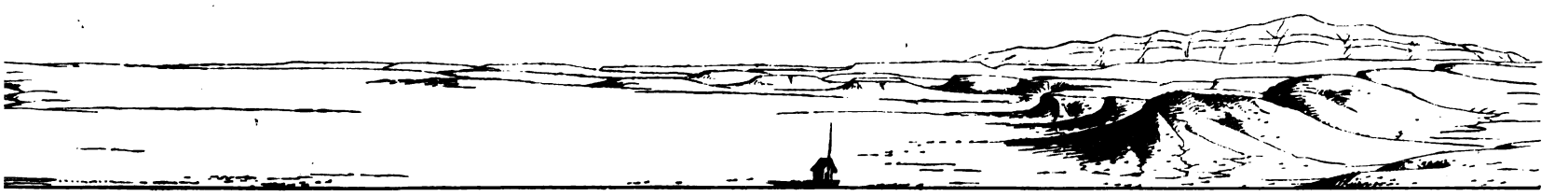
Little bluffs of gray sand wing on the plain west the Fort

Ft Steele
696 m.

North Platte River
6477 ft

Whitish sands and marls / foreground
Ridges of rusty reddish sandstones in weathered tiers

Cretaceous beds passing up in the distance into the Coal Series



wares grass and scattered close growing sage

Grenville
704 m.

Red beds
Rattlesnake Mts. in distance - a white band of limestones very plainly se

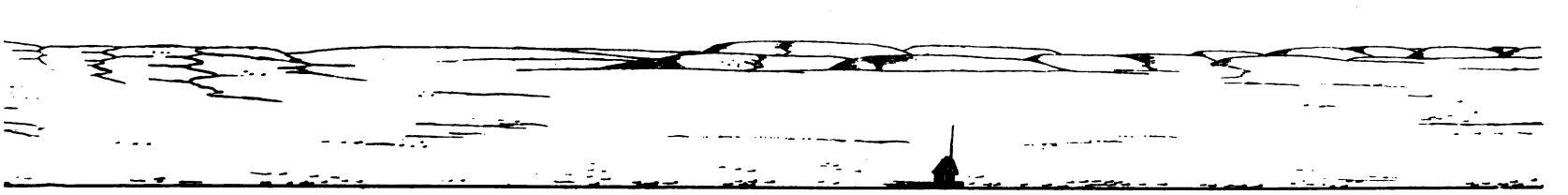
arid plain - scant sage

a brown sandstones

White ribs of sandstones

Plain almost bare, scattered scant sage no grass

1 The Coal Series

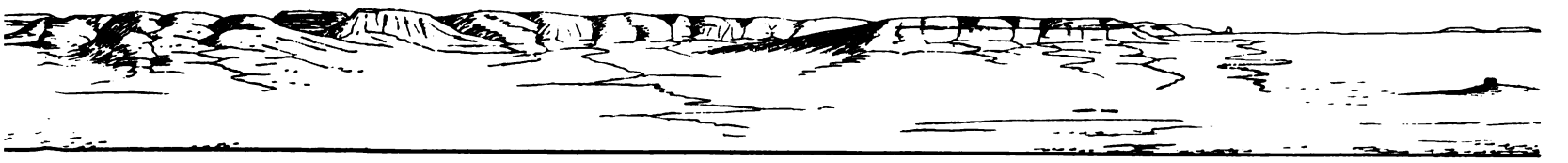


"Prickly pears" cover ground in places so thickly as to give it a purple gray tinge

Separation
6907 ft
723 m

Sage - no grass

Cretaceous passing under Washakie group (Miocene)



Semi bald buttes sage

Buttes, rusty yellow marls with white and purple streaks or bands horizontal

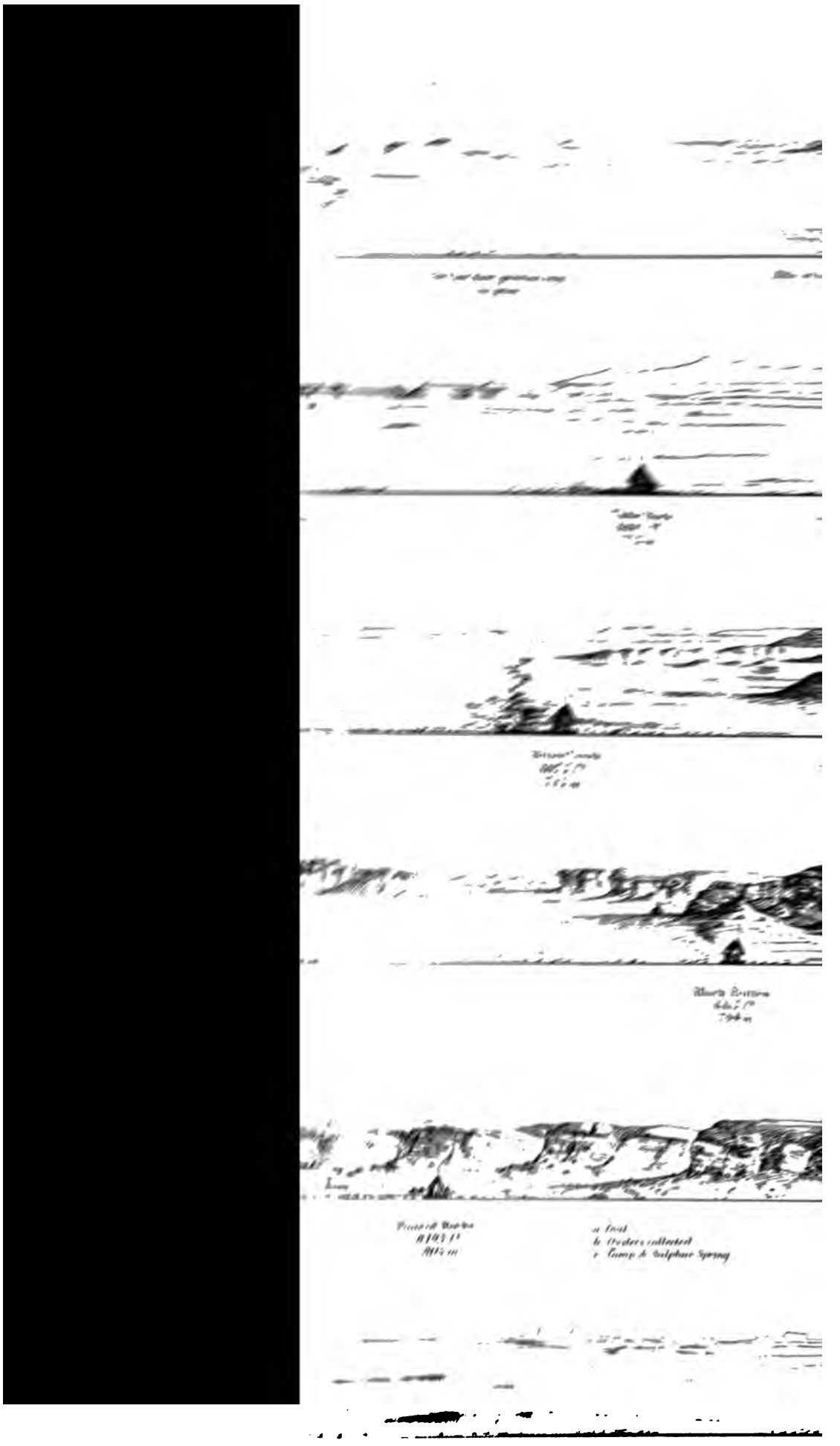
Sage growing in streaks as through marking the course of water

Washakie group Miocene

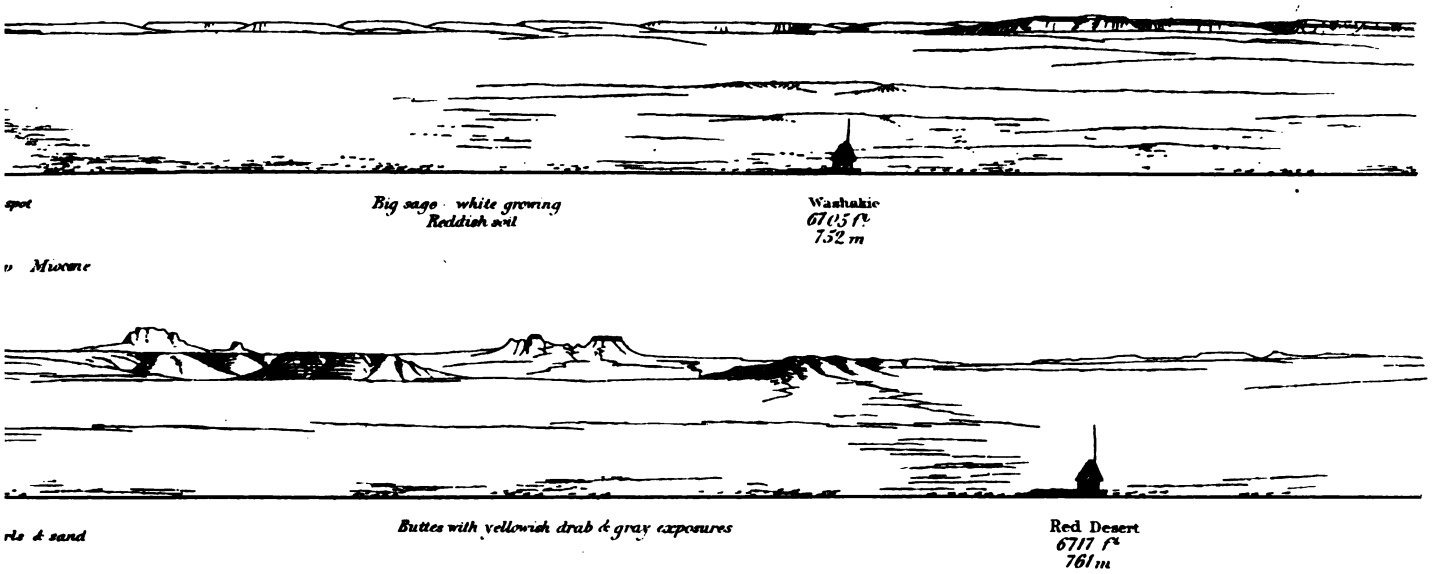
Rusty yellow exposures on the eroded buttes

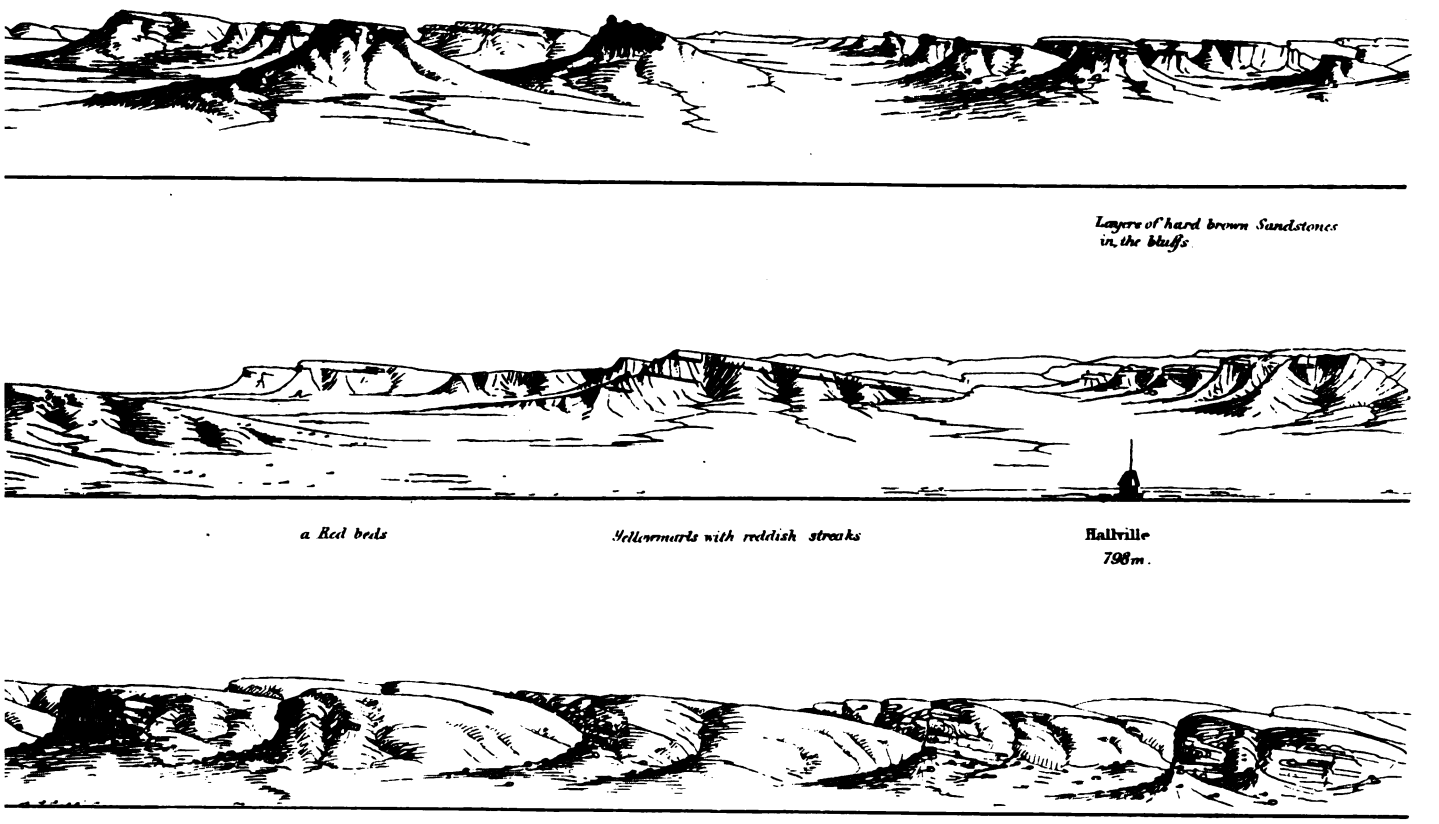
Sage in bunches scant grass

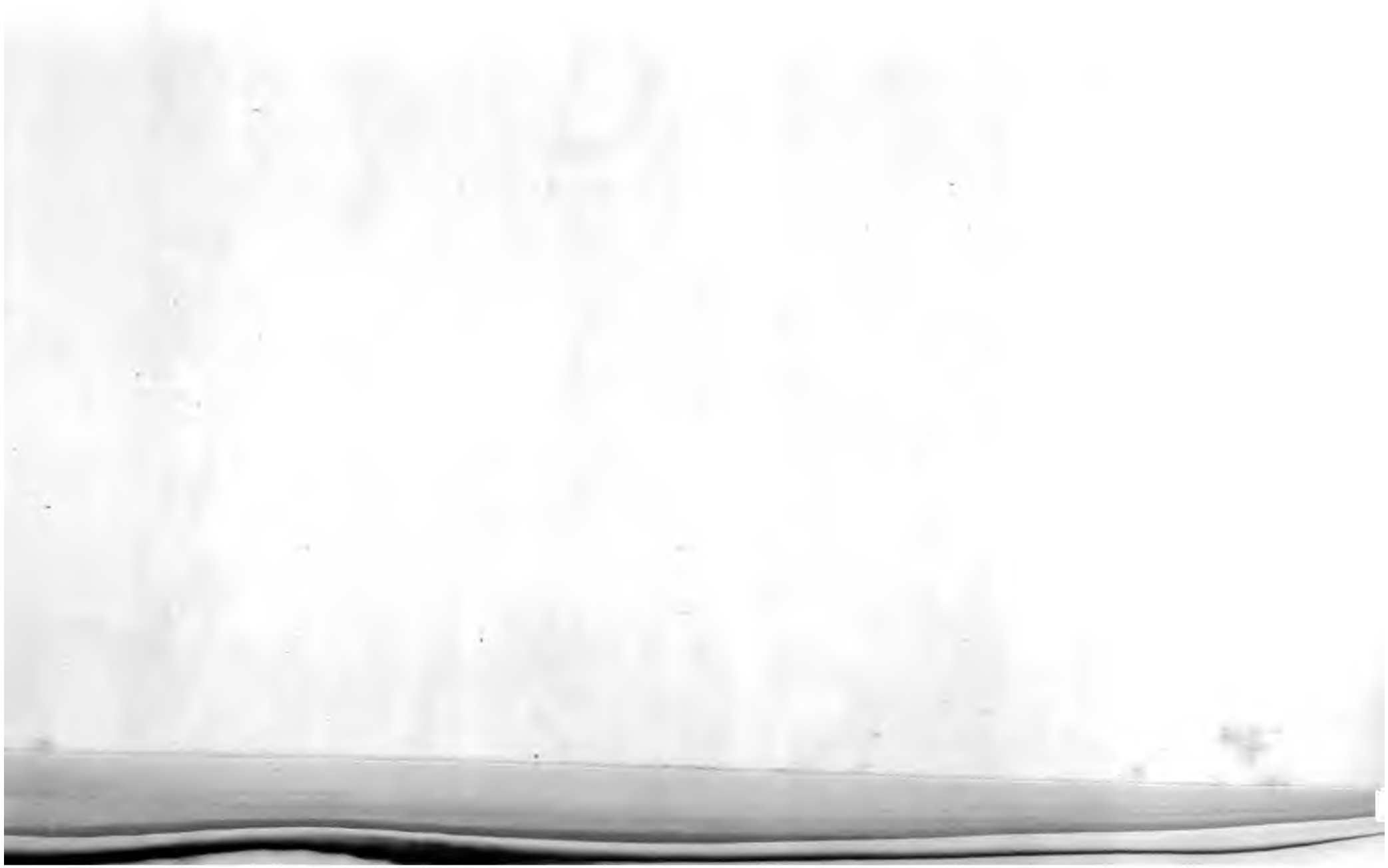
Divide of the Continent
7100 ft



panoramic photomontage southward over the gulch


spot
Big sage · white growing
Reddish soil
Washakie
6705 ft
732 m
o Miocene
rls & sand
Buttes with yellowish drab & gray exposures
Red Desert
6717 ft
761 m
Washakie Group Miocene
Rolling arid sage plain · reddish soil


Layers of hard brown Sandstones
in the bluffs
a Red beds
Yellow marls with reddish streaks
Hallville
798 m.
Rusty drab sandstones
Whitish gray limestones



ber strong rank sage scattered.

Rusty

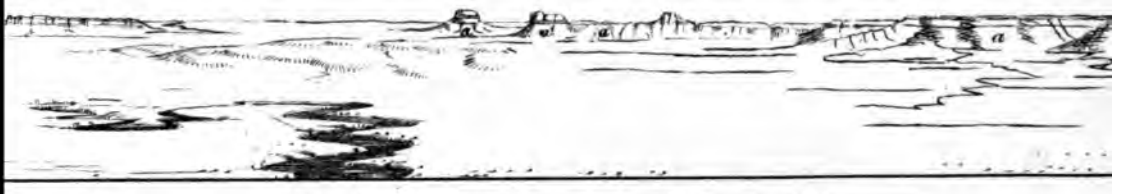
Lower portion of Coal Group

ish marly beds.
ant

Green river marls and shales
under heavy cap of dark brown

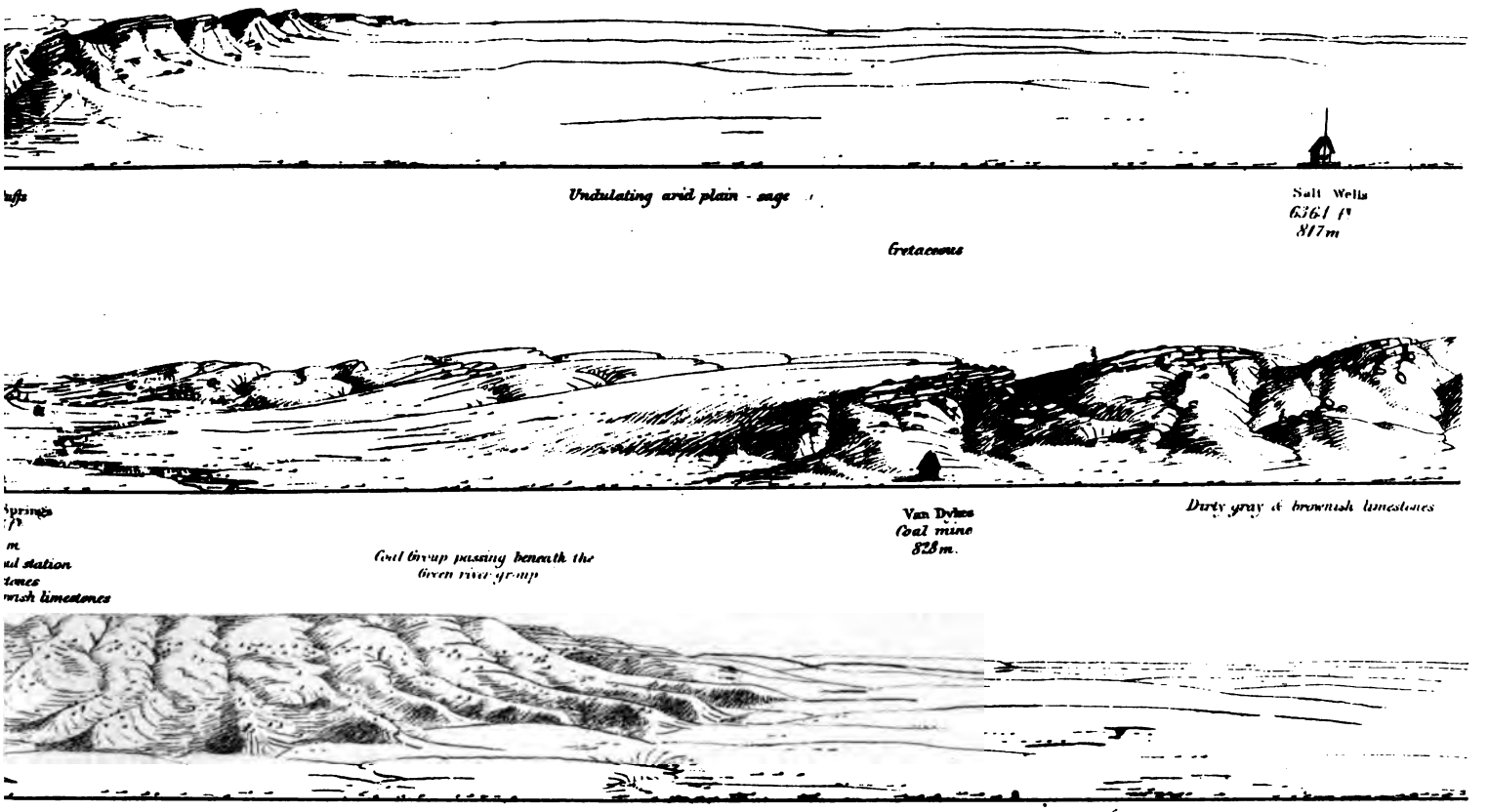
rolling country with lines of bluffs on horizon
showing rusty yellow marls with white bands

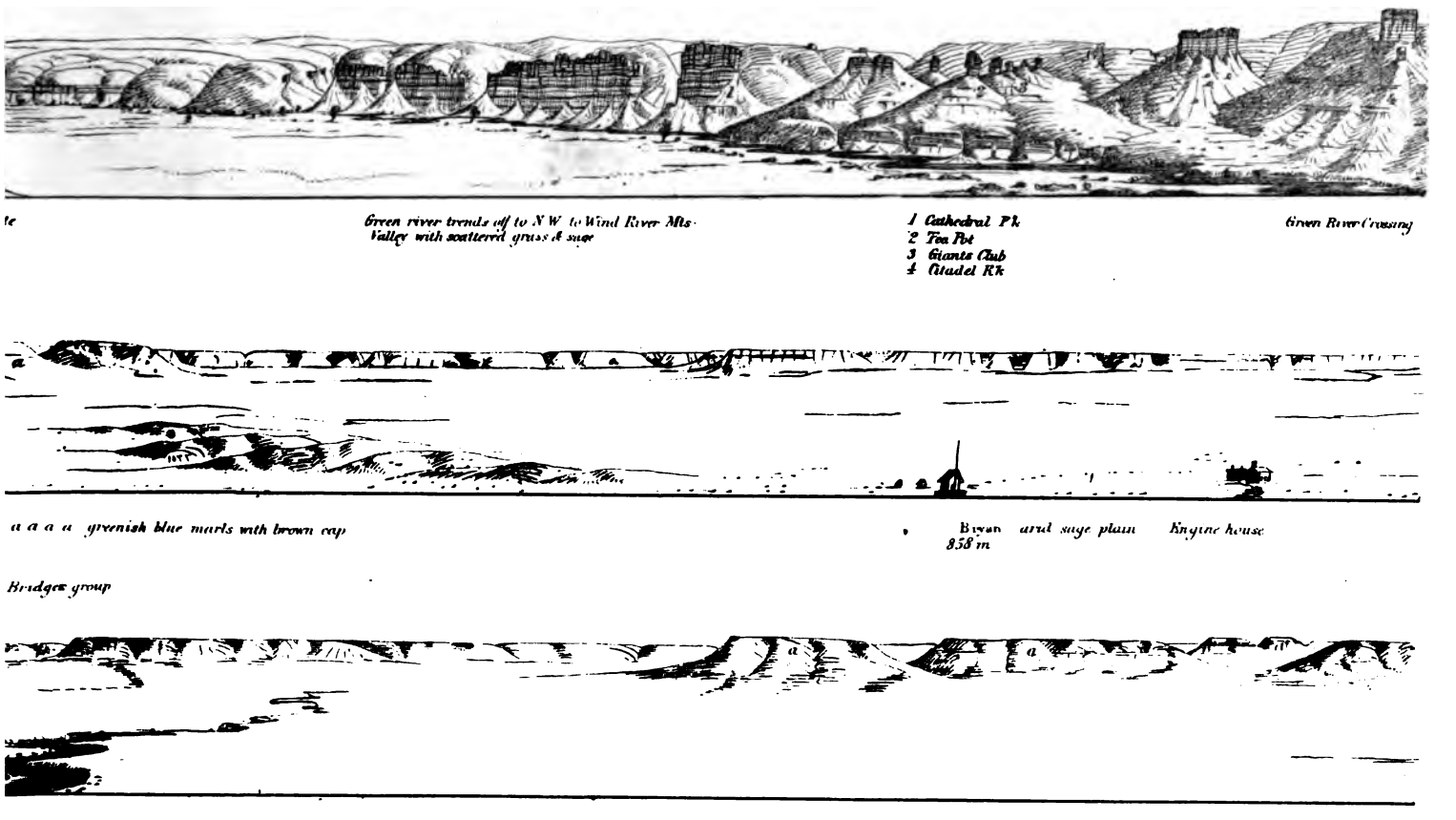
Green river group



river margin *Blacks Fork* *Sage in spots arid - bare*

Green river group with here and there


Undulating arid plain - sage
Salt Wells
6361 ft
817m
Cretaceous
Van Dyke
Coal mine
828m.
Dirty gray & brownish limestones
Coal Group passing beneath the
Green river group
Green river group


Green river trends off to N W to Wind River Mts
Valley with scattered grass & sage
1 Cathedral Pk
2 Tea Pot
3 Giants Club
4 Citadel Pk
Green River Crossing
Bryan
858 m
arid sage plain
Engine house
Bridger group

HE TERRITORIES 1870

Arid sandy bald sage plain with pebbles strewn thickly over

b Bluffs bald on summits and strewn with black pebbles

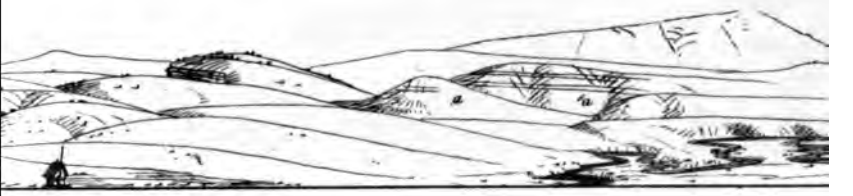
a First appearance of the Bridger group in full

tom

Arid rolling country in distance - sage

Station
7?
4 m

Rolling arid country - sage

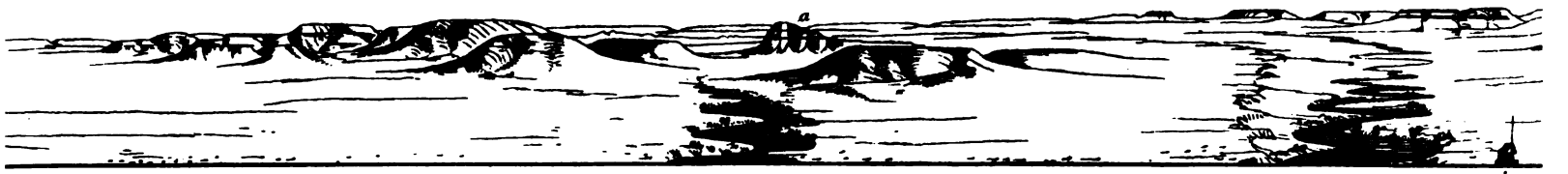


Bridger Station
6560 ft
913 m.

Muddy Creek Crossing

Old stage road

ith here and there a red bed wash, grass scant and sage scattered

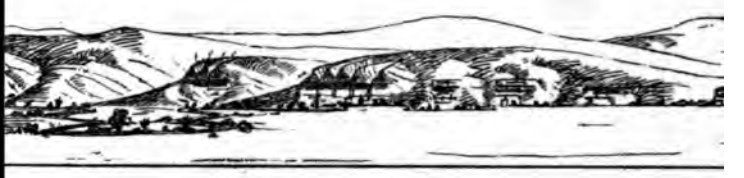


Arid semi bald sage plain

Sulphur Ck.

flat
Limestones
Bluish gray marls

a Cretaceous clays



Shales orange red & yellow over rusty yellow sandstones

a White sandstone layers cropping out of red beds

Close low growing sage and grass near the track

Tunnel
Red Beds

Abundant grass scattered pines

Red Beds of Echo

grass and sage

Aspen
7463 ft
957 m

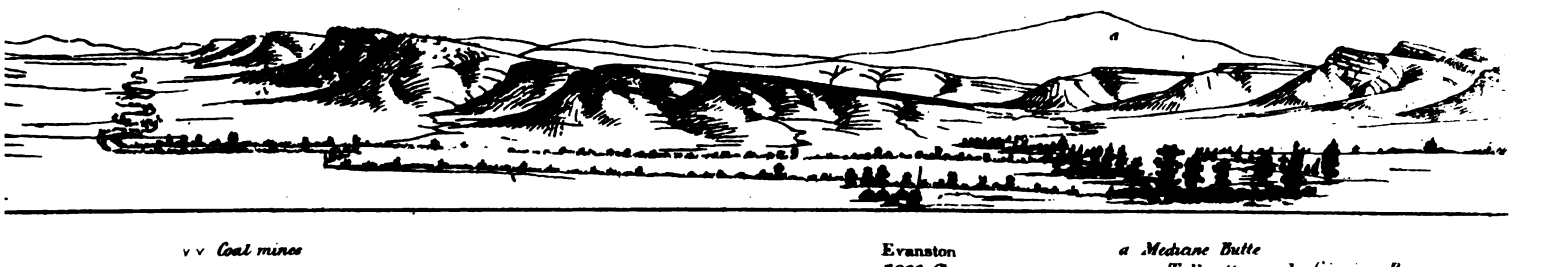
Cut
Red Beds - marl & pebbly soil - deep brown on surface
High rolling country *uniform thick sage*

Bear river (Crossing)

b Brown sandstones on red beds

v v Coal

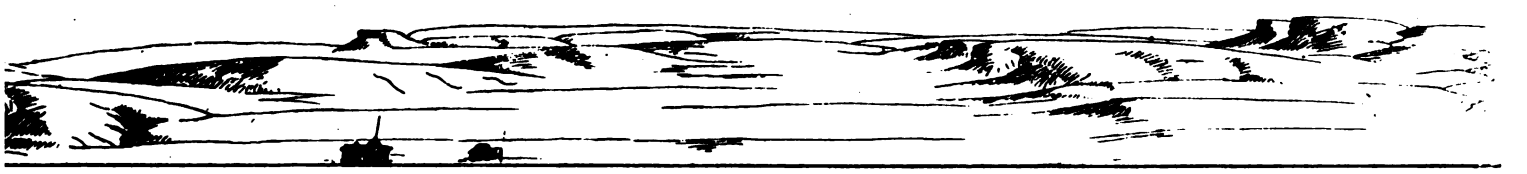
Vertical limestones - white & gray



v v Coal mines

Evanston
7000 ft
955 m

a Medicine Butte
Tall cottonwoods fringing Bear river

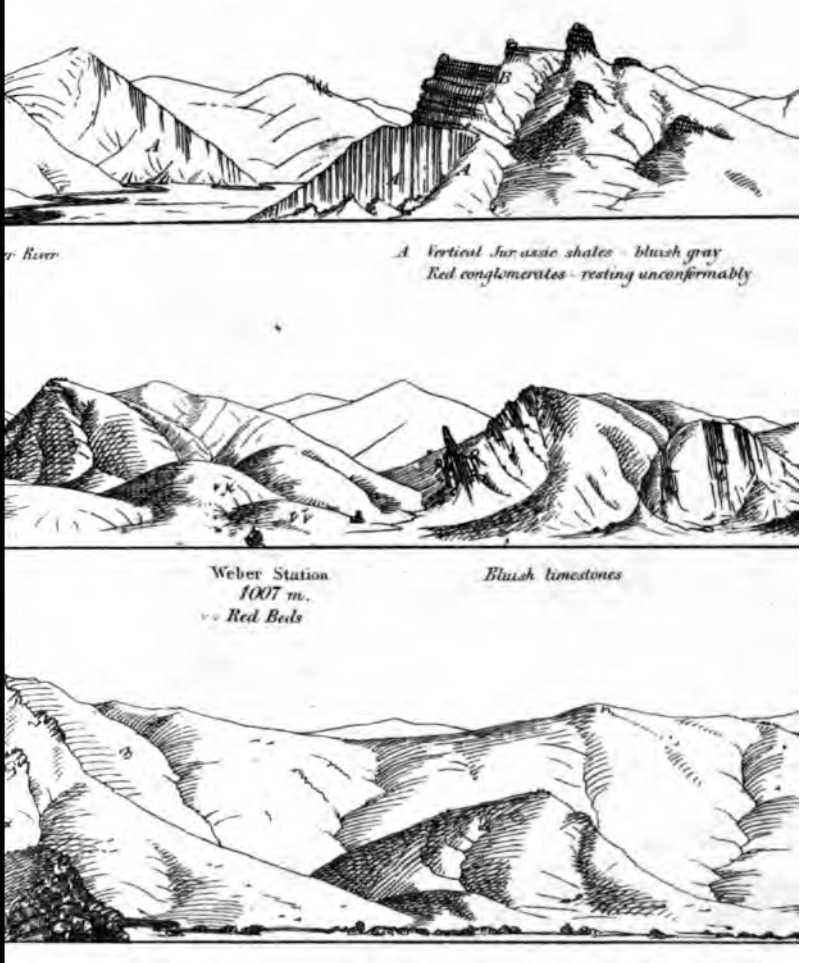


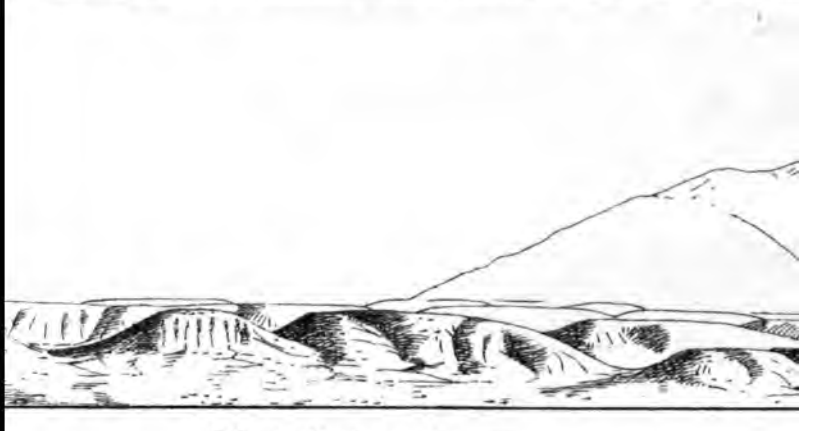
grass

Wasatch
6819 ft
966 m

Grass no sage
Bottom soil deep frosty black
Highlands dark reddish loam

Castle Rock
6240 ft
975 m


B
A
A
A Vertical Jurassic shales - bluish gray
Red conglomerates - resting unconformably


Weber Station
1007 m.
Red Beds
Bluish limestones

Buffs marls dots of sage over them - grass
Salt Lake group (Pliocene)

ssy valley — a Red Beds — b white sandstones — Witch Rocks

(Tunnel) Brown & red horizontal Quartzites — (Tunnel) — AAA White gray sandstones B Red Beds — Quartzites

woods — Low rolling terraces of coarse pebbly brown buff marls & in the valley

h — Cut Pebbly marls — Banded gneiss — a a shales — Quartzites - Rusty gray

THE TERRITORIES 1870

b Ogden

Utah Central R.R.

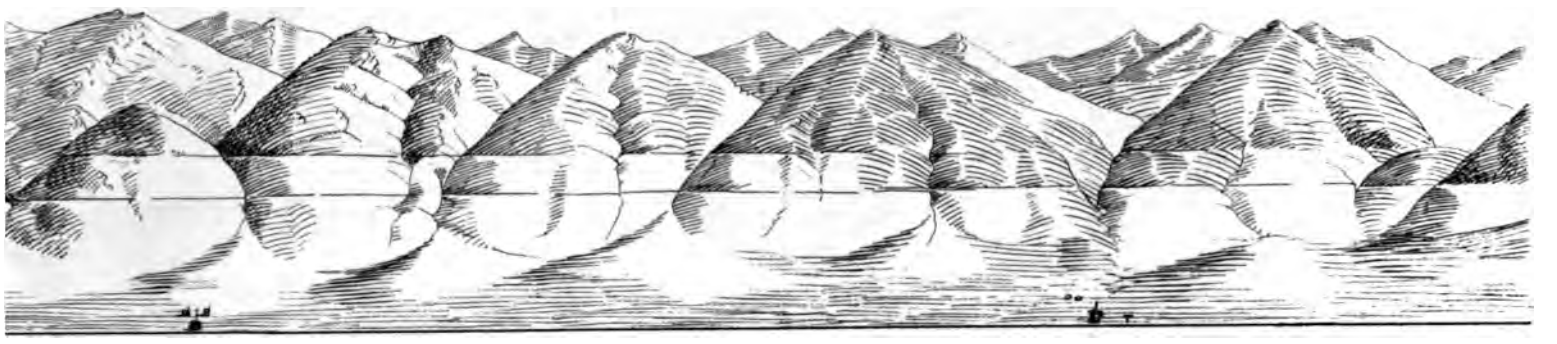
b Weber Canon

Farmington

ns in horizon with variegated conglomerates in foreground

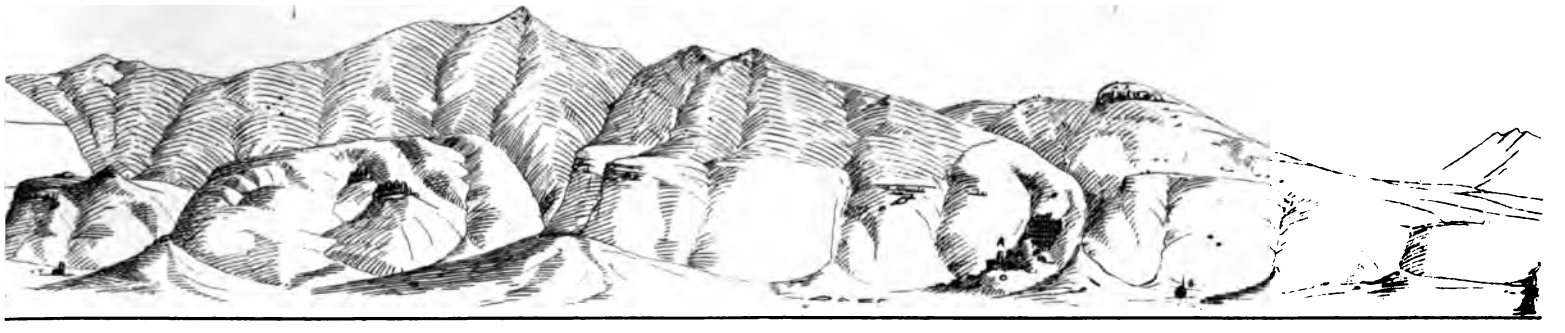
Haysville *Creek*

Wahsatch spur running down parallel with the R. R. to Salt Lake
Gneisic rocks with modern detritus at base. Terraces distinct



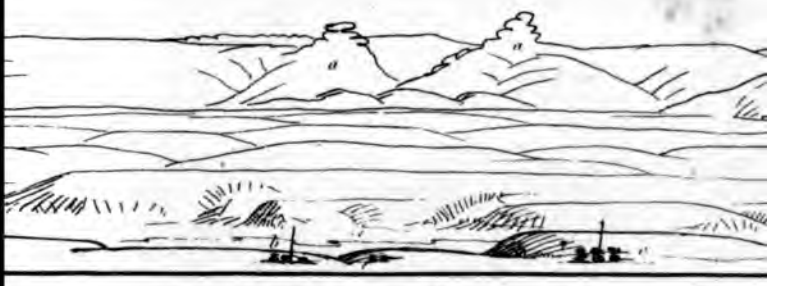
Centerville *Woods Grossing*

Wasatch Mountains thickly timbered at the Summits none at the base
Gneisic rocks exposed all others concealed by modern de ritus Terraces distinct



Limekiln *Hot Sulphur Springs Quartz* *Warm Sulphur Springs & bath House* *Salt Lake City northern limit*

Steel blue Carb. limestones cropping out from beneath the variegated beds of the Wasatch group



Camp Reynolds Ft Russel

a a a. Granites by Sherman & Laramie Range

West

Hog Backs of Chug continued

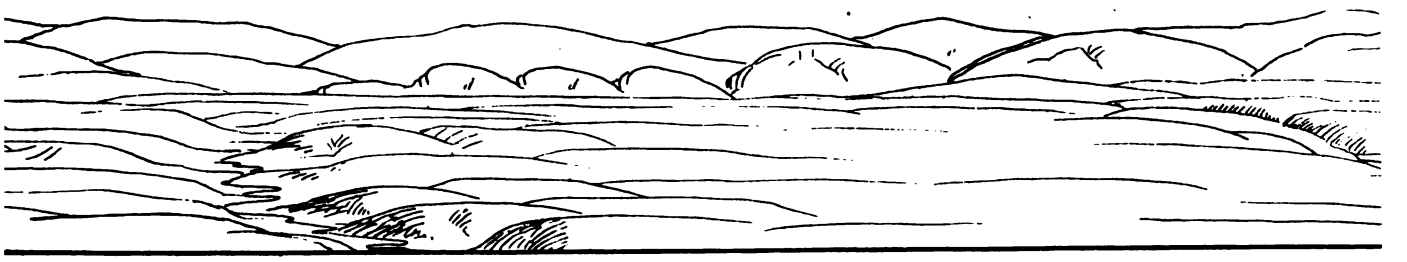
West

Branch of Chug

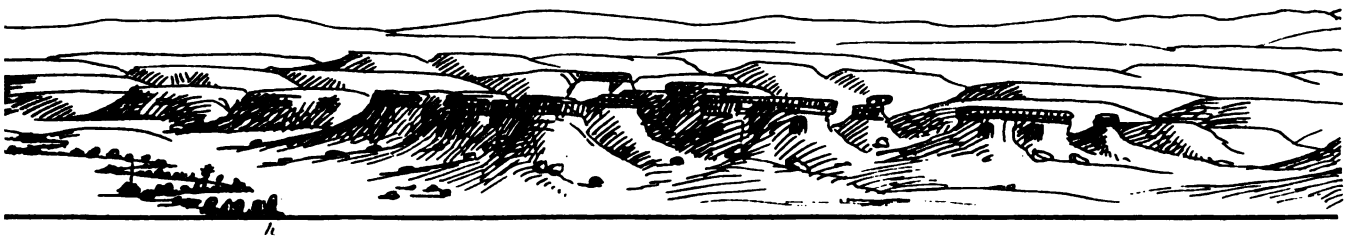
Laramie River & Bad Lands

Pl.XXII.

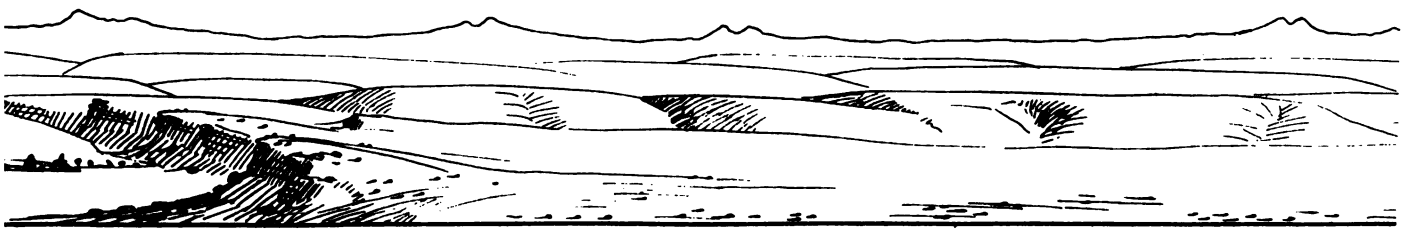
O FETTERMAN 1870

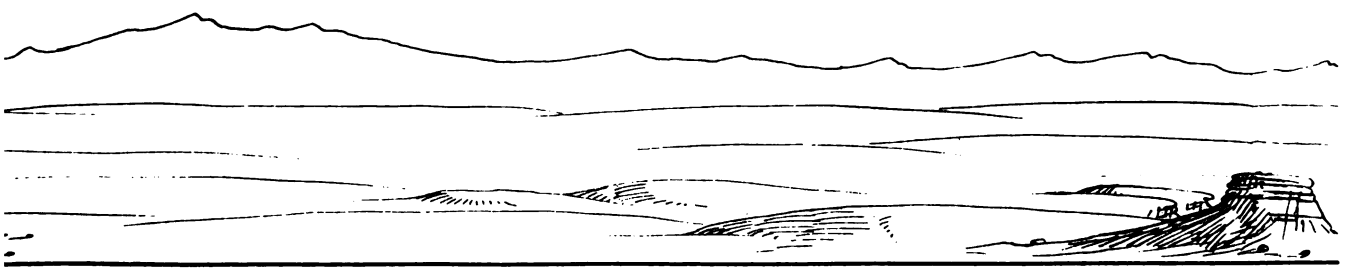


Lodge Pole Ck. *d d Hog Backs near head of Lodge Pole & Chug* *e Location of iron mines*

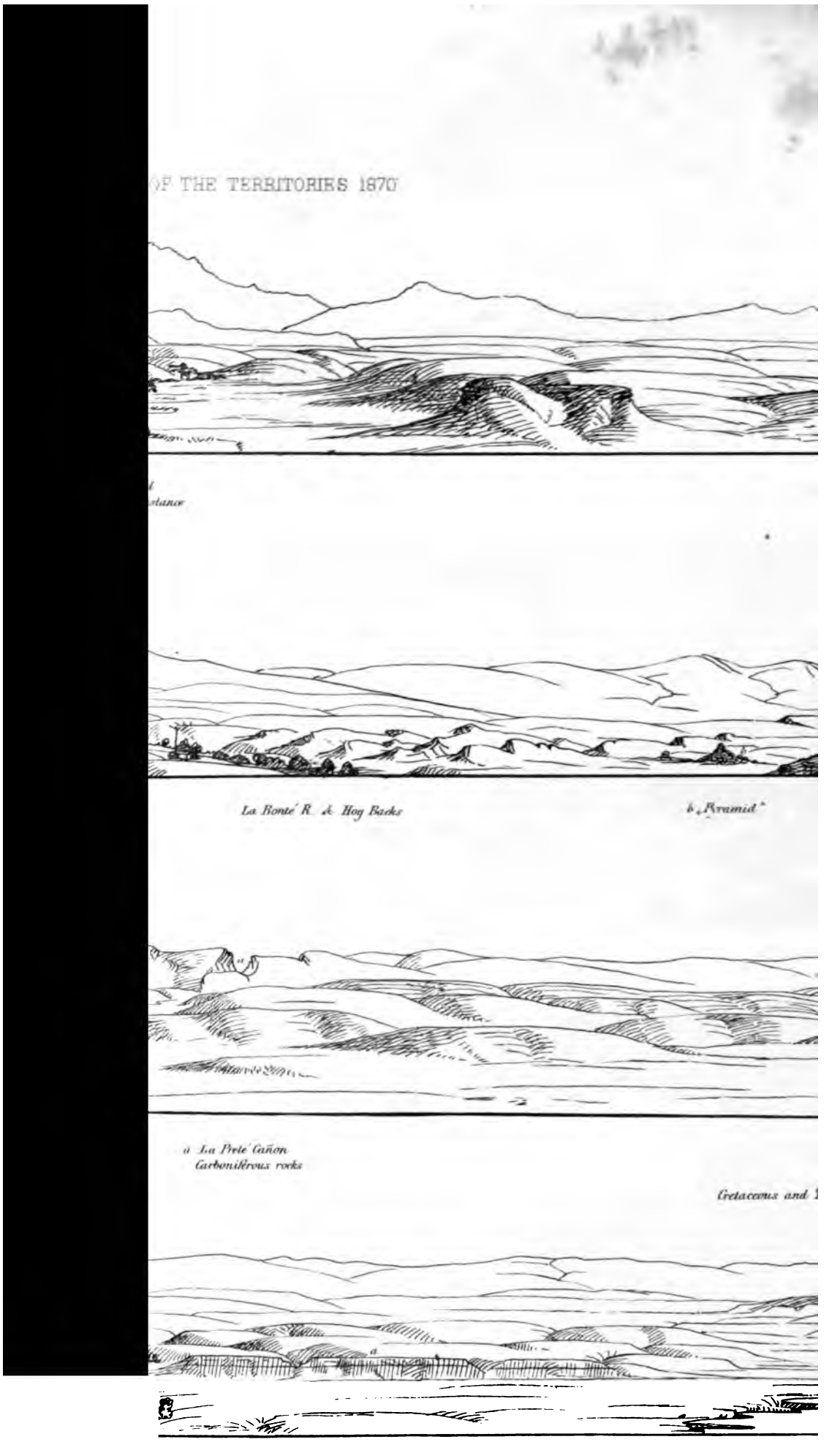


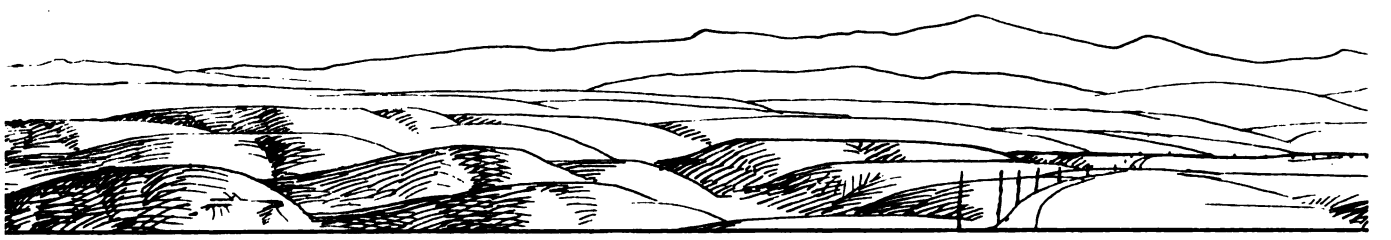
h Chugwater *Chugwater Rocks* *Modern Tertiary*

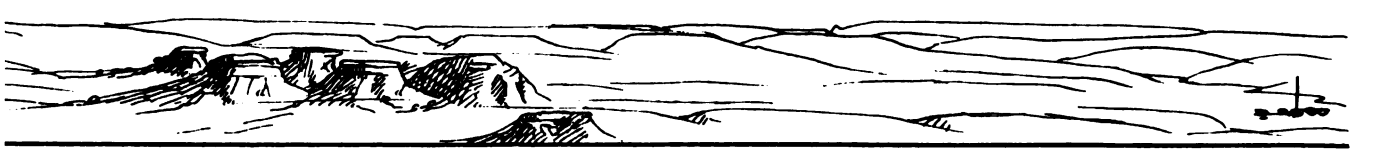




Laramie Range in distance *sage plain and undulating*


OF THE TERRITORIES 1870
La Ronte R. & Hog Backs
b „Pyramid"
a La Prele Cañon
Carboniferous rocks
Cretaceous and

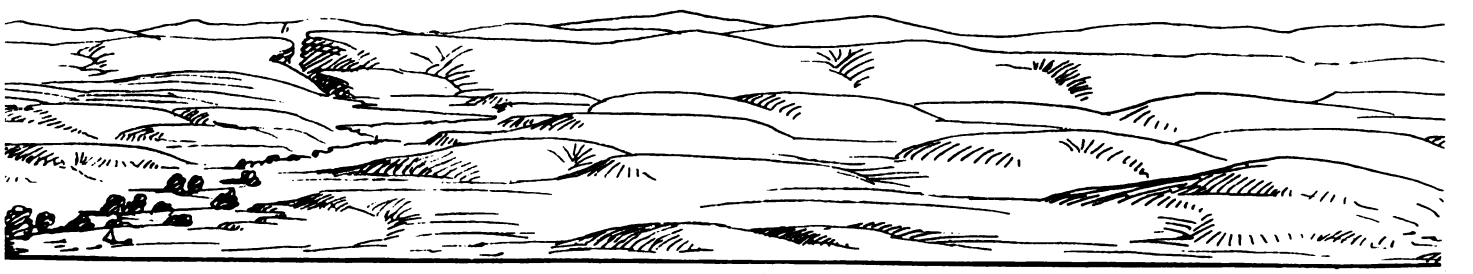




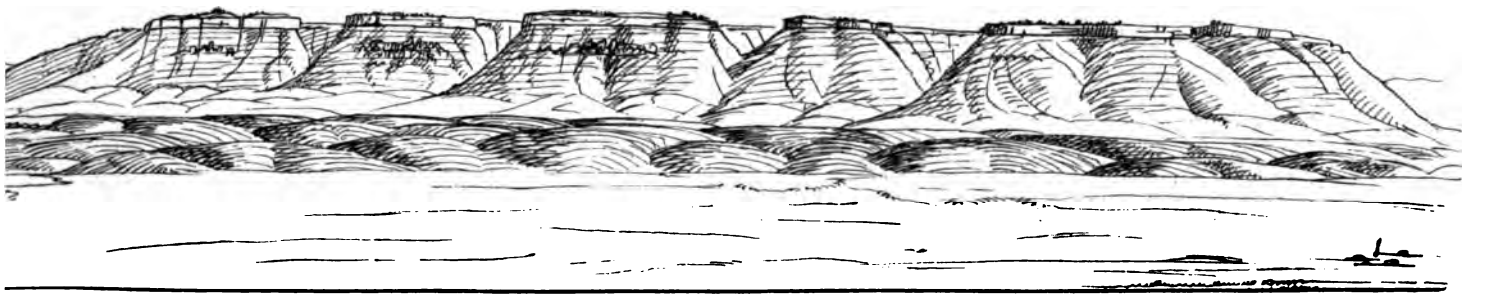
iacks at head Prelé Creek

d Marls & Bad Lands

Ft Fetterman



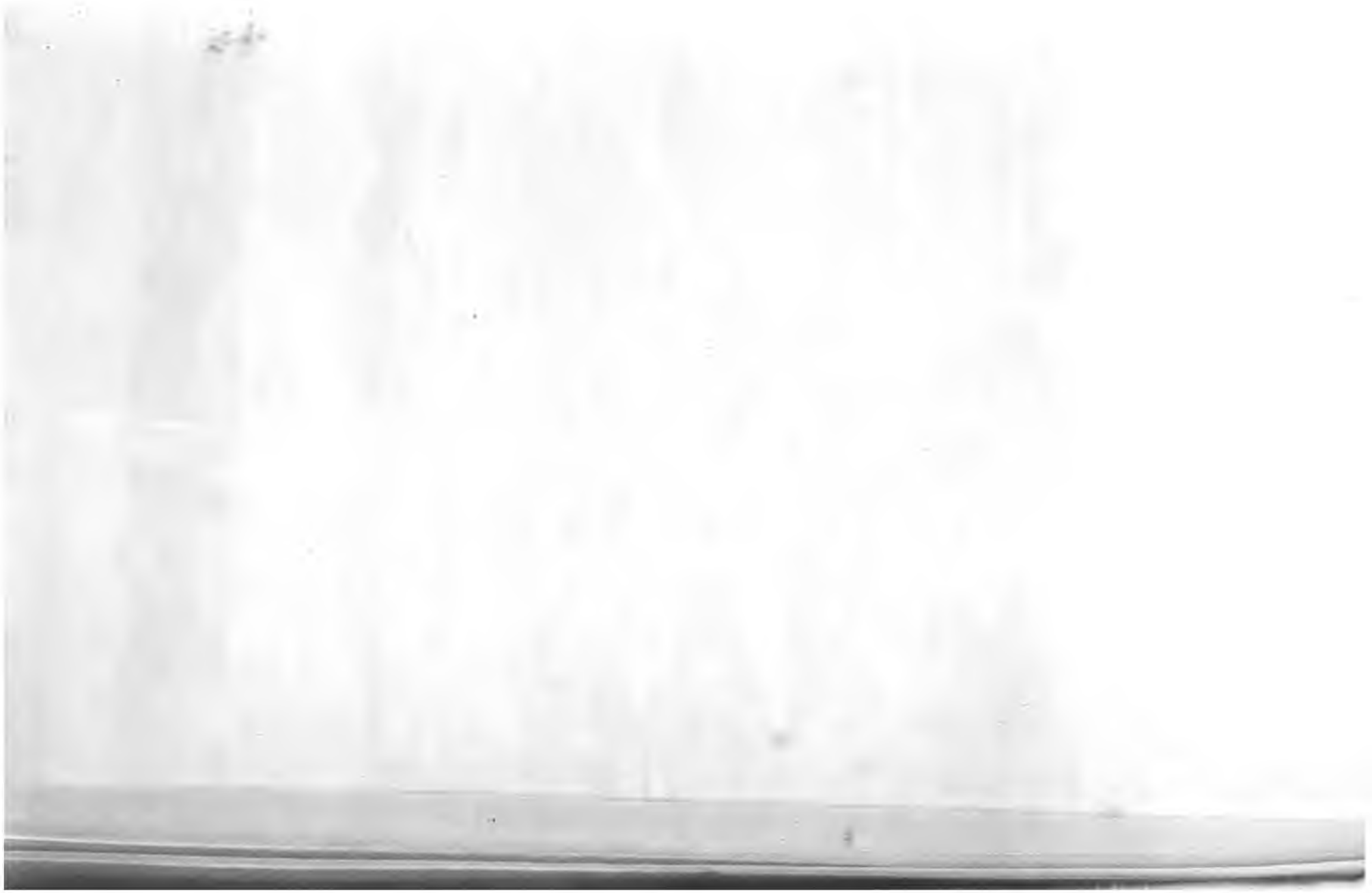
ver Elden Creek & Cañon Carboniferous



v Cañon rous limestones

Caspar Mts with outflows of Trachyte Capped with Carboniferous limestones

Old Ft Caspar



FROM O[illegible]LD FORT CA

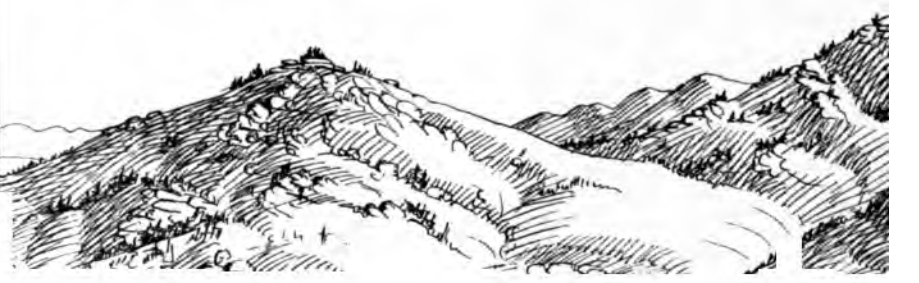
b b Jurassic limestones

a Rattlesnake Mts.

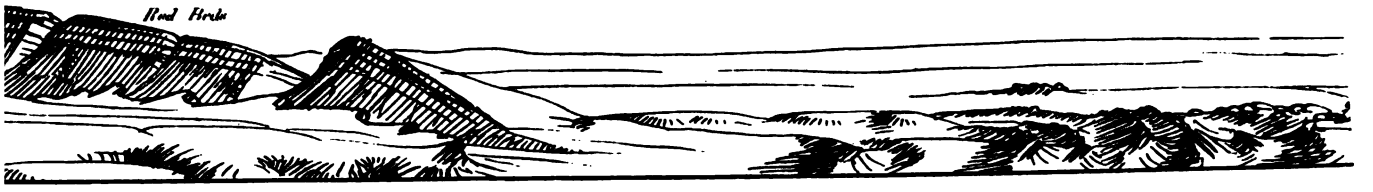
rossings

Carboniferous limestones &
underlaid with Potsdam sandstones

b Hard gneissoid



TO SOUTH PASS CITY AND WIND R. MTS

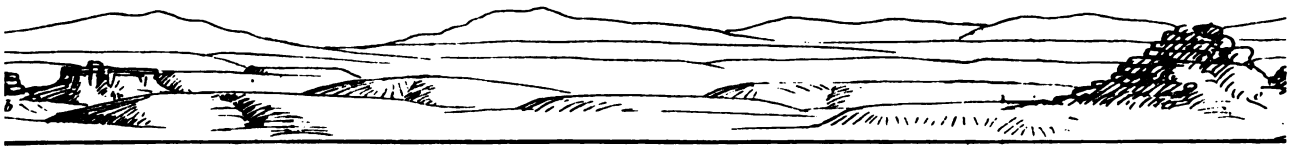


l Red Buttes, Triassic ?

Cretaceous and Eocene Tertiary

d Sweetwater Granites
e Independence Rock

Devils Gate
with igneous dike



d, in soft gravel & marls

c Three Crossings Sweet water
Feldspathic granites

c Camp at big Bend

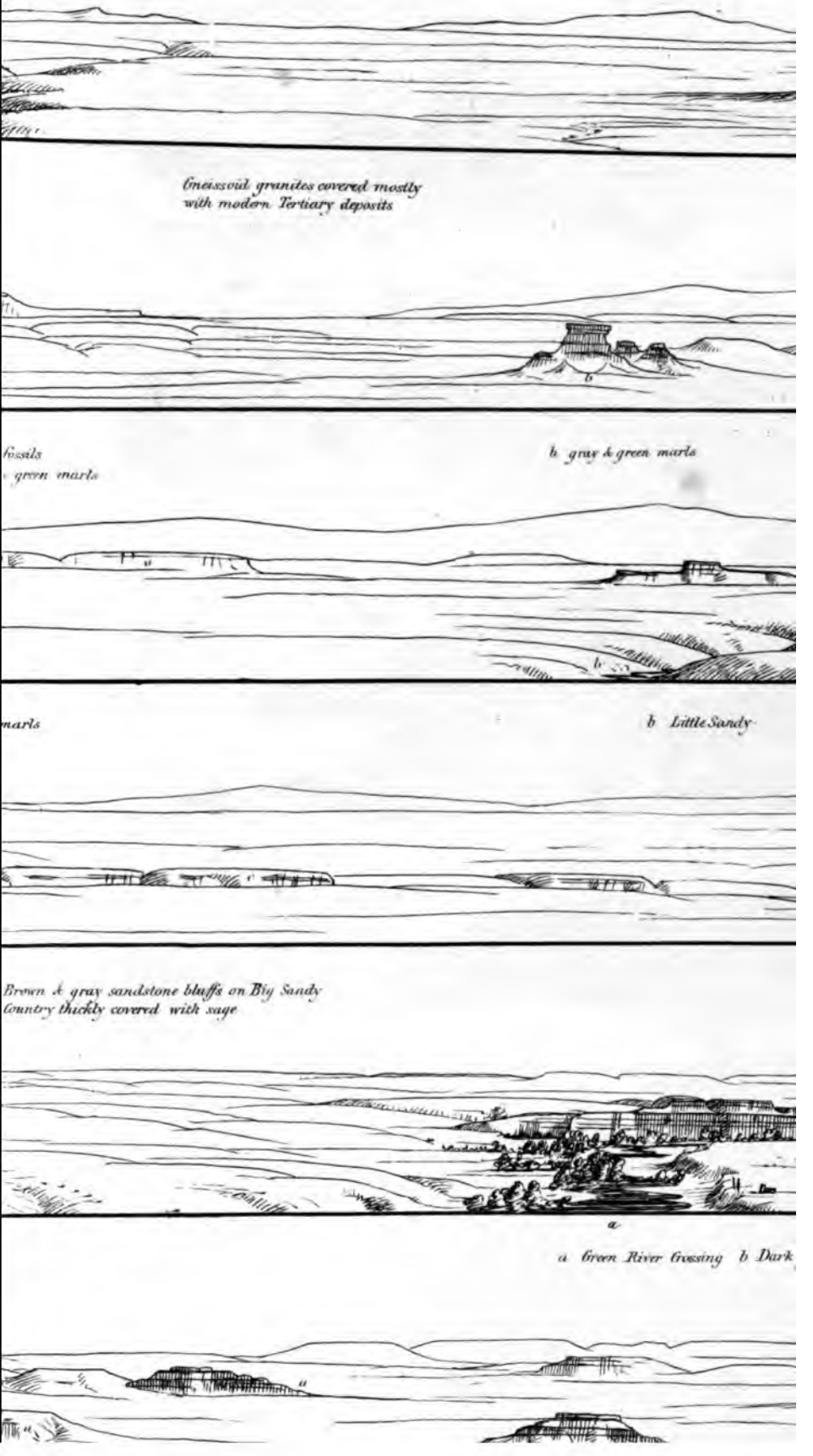
d Canon of Sweet water

c South Pass City

Foothills of the Wind river Mts.

Gneissic granites

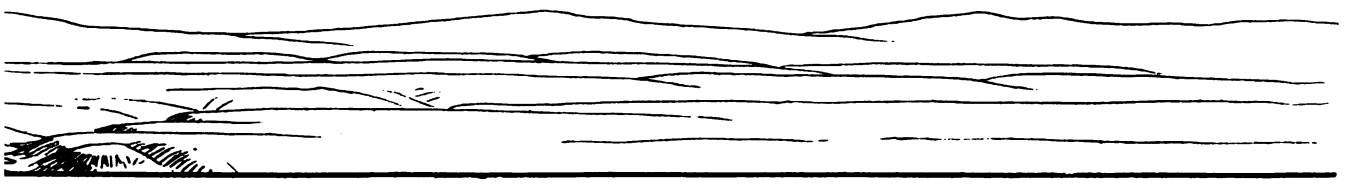
OF THE TERRITORIES 1870. FROM SOUTH PASS



STATION, UNION PACIFIC RAIL ROAD
st 1870

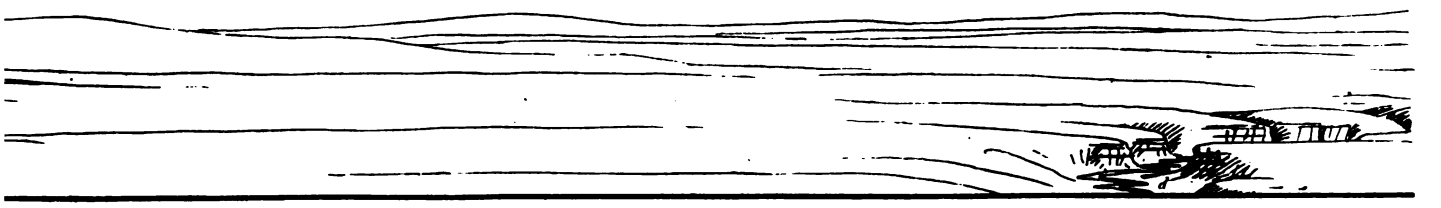
PLXXV

b b "Twin Buttes" Tertiary *c Pacific Springs* *d fossils shells found gray, yellow & green marls*



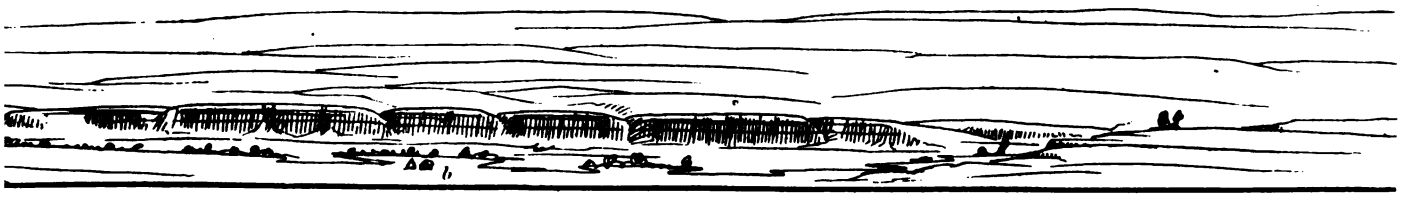
c Dry sandy *Low rolling sage benches*

Modern Tertiary as far as the Eye can reach



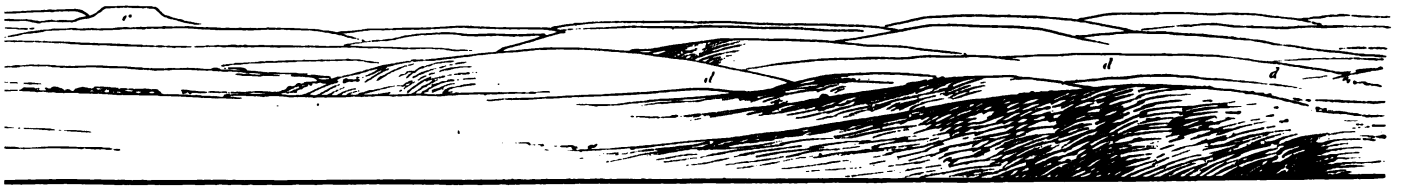
ile Skull found *Big sandy*

Modern Tertiary



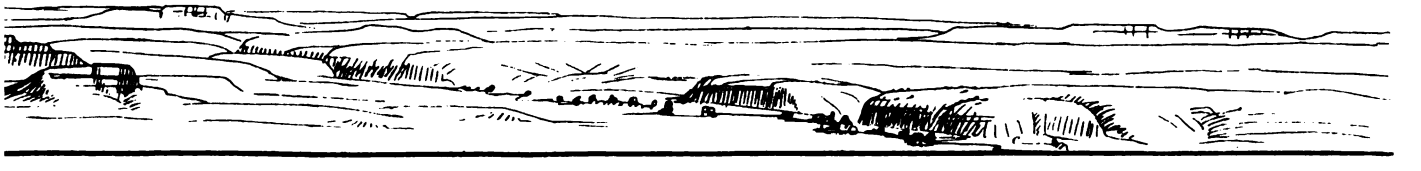
b Camp on Big Sandy - fish scales found in sandstones bluffs

Modern Tertiary



Rolling arid hills

Modern Tertiary

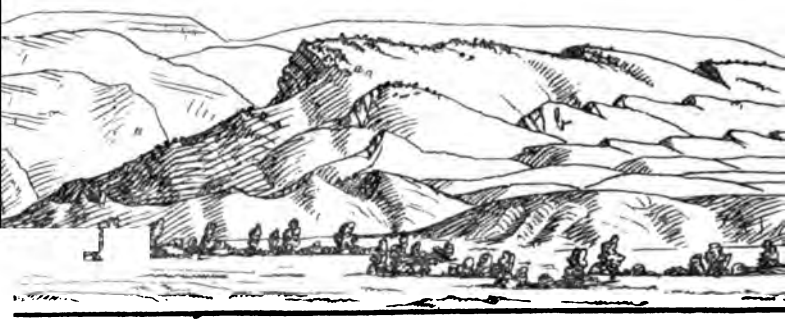


[redacted]

a a Bridger group of Bad Lands

Bridger group *g g Photograph Ridge*

d d Bridger group of marls - South side of Henry's Fork



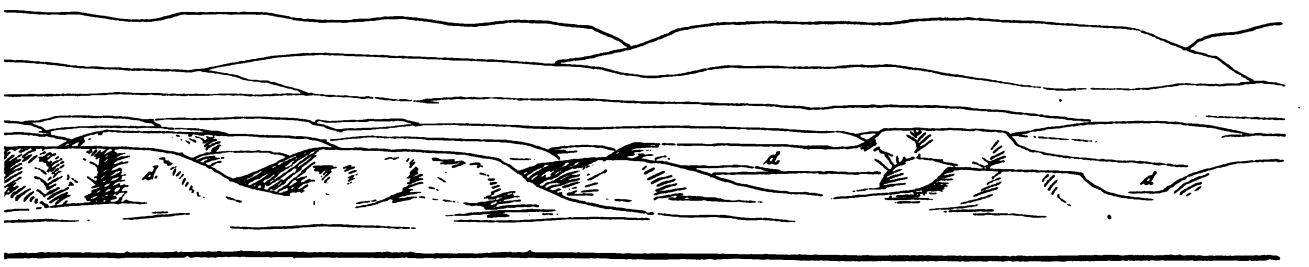
LAMING GORGE – GREEN RIVER

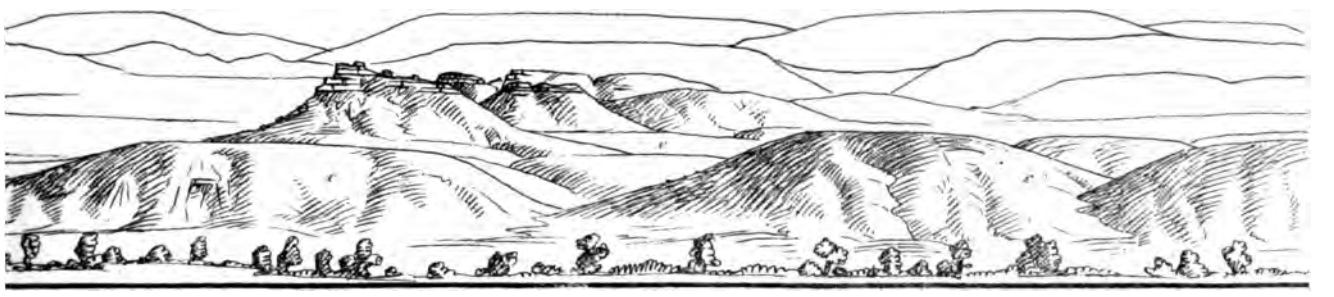
Fork 75 miles.

s Fork

Fort Bridger
c Bridger Butte

Bridger group of Bad Lands. Uinta Mts on horizon

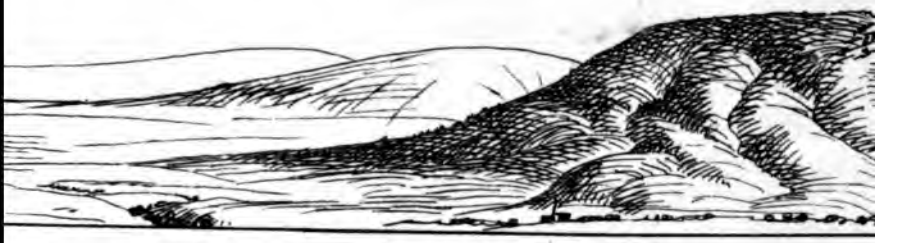




c Bridger group of marls sandstones &c. Uinta Mts on horizon Red Quarzites

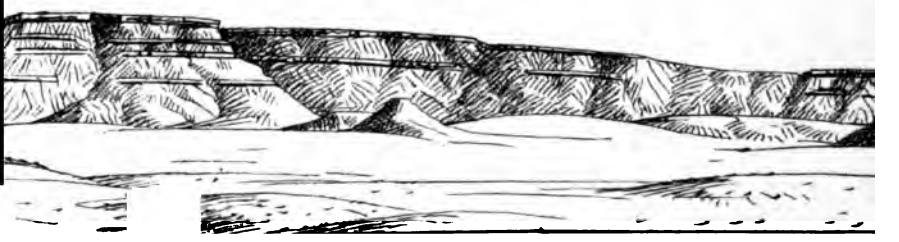
a. Fossils found

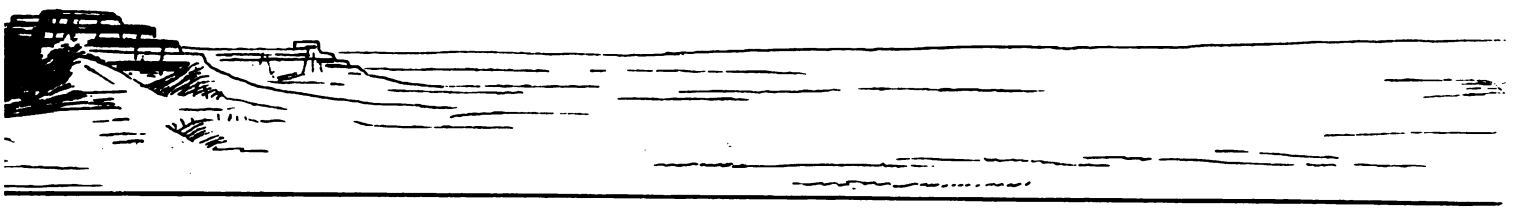
Rolling Hills – grass & ca



Sulphur Springs

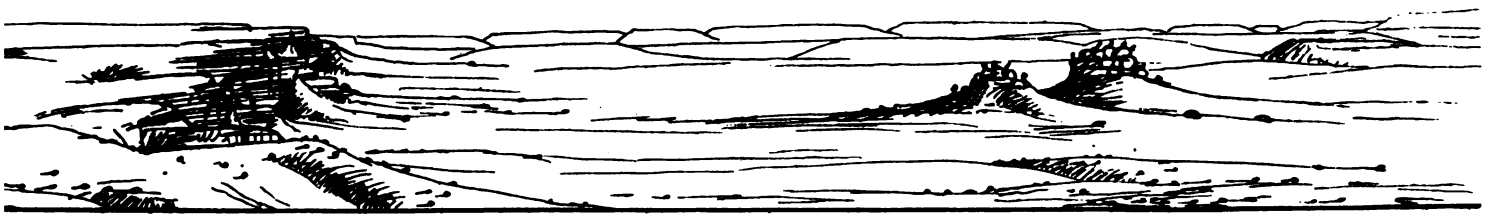
Pine Grove





Red Beds in bands
group, Miocene

Level plain, red earth - scant grass



Gray marls with purplish bands

Miocene

Gray sandstone buttes weathered into & resting on the marls

with fossils found Coal

Coal

Transition group dipping beneath the Washakie group

Bridger Pass
Cretaceous mounds & terraces at its base
passing up into Tertiary or Transition group

Camp Oct. 20

1st Crossing Sage Ck

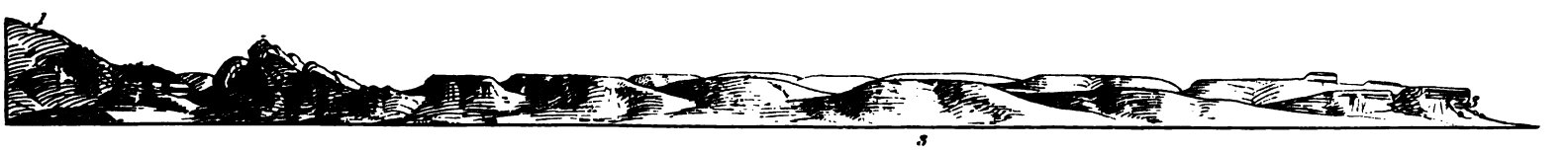
Transition group

North Platte & Camp Oct 21 - 22, 1870

Transition group

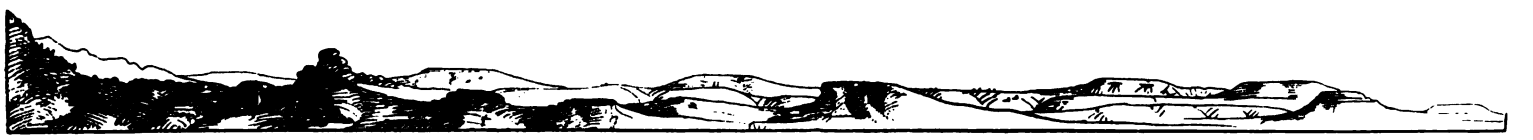
LODGE POLE CREEK

1. Granites - 2. Carb. beds passing to Red Beds - 3. Parallel valley of Erosion 4 Modern Tertiary beds

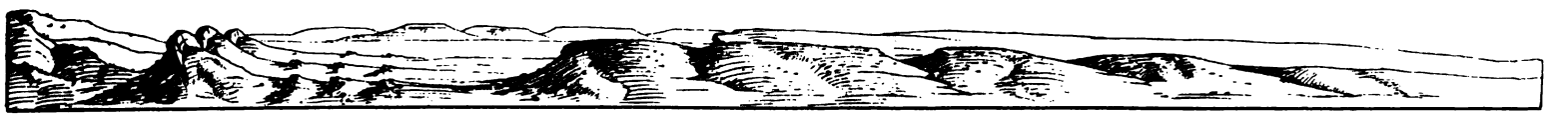


CHUG WATER CREEK

Granites, Laramie range 2. Carb rocks with Jurassic Cretaceous passing under White river Tertiary - 3. White river Tertiary



COTTONWOOD CREEK.



HORSE CREEK.

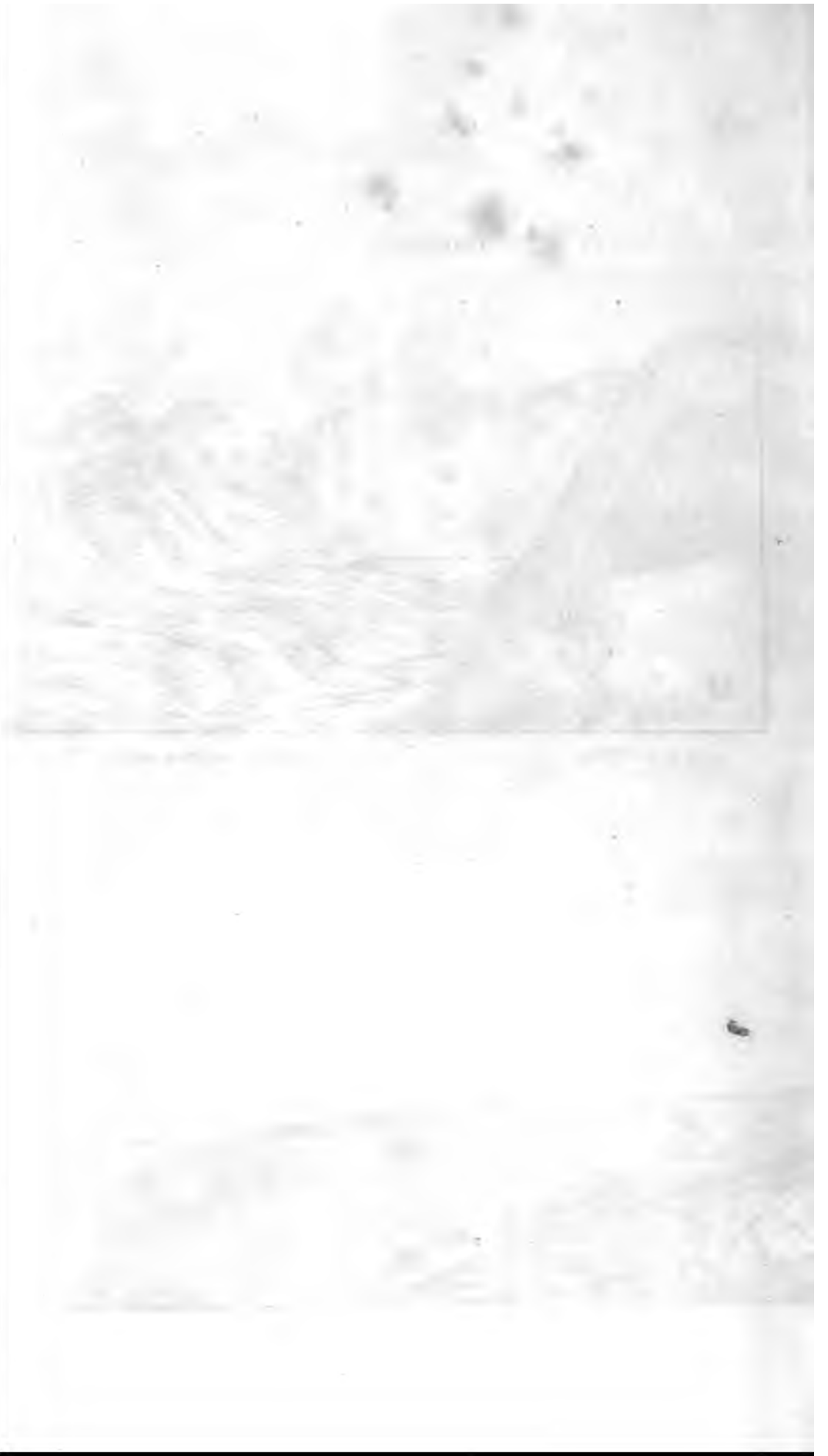
LA BONTE CREEK

BOX ELDER CREEK

[redacted]

[redacted]

[redacted]



HE TERRITORIES 1870.

Henry's Fork. 3 Uinta Mts.

Green River.

2 Carboniferous. 3 Yellowish Grey Sandstones Triassic

– beds

River from Flaming Gorge

Green River Marls & beds

Abundance of fresh Water Molluscs.

Vast 12,000 ft. cretaceous in this order.

Henry's Fork Tertiary beds.

Back Bone Uinta Mts. to Henry's Fork about 3½ Miles.

White Quartzites with protrusion of black trap Brown's Hole.

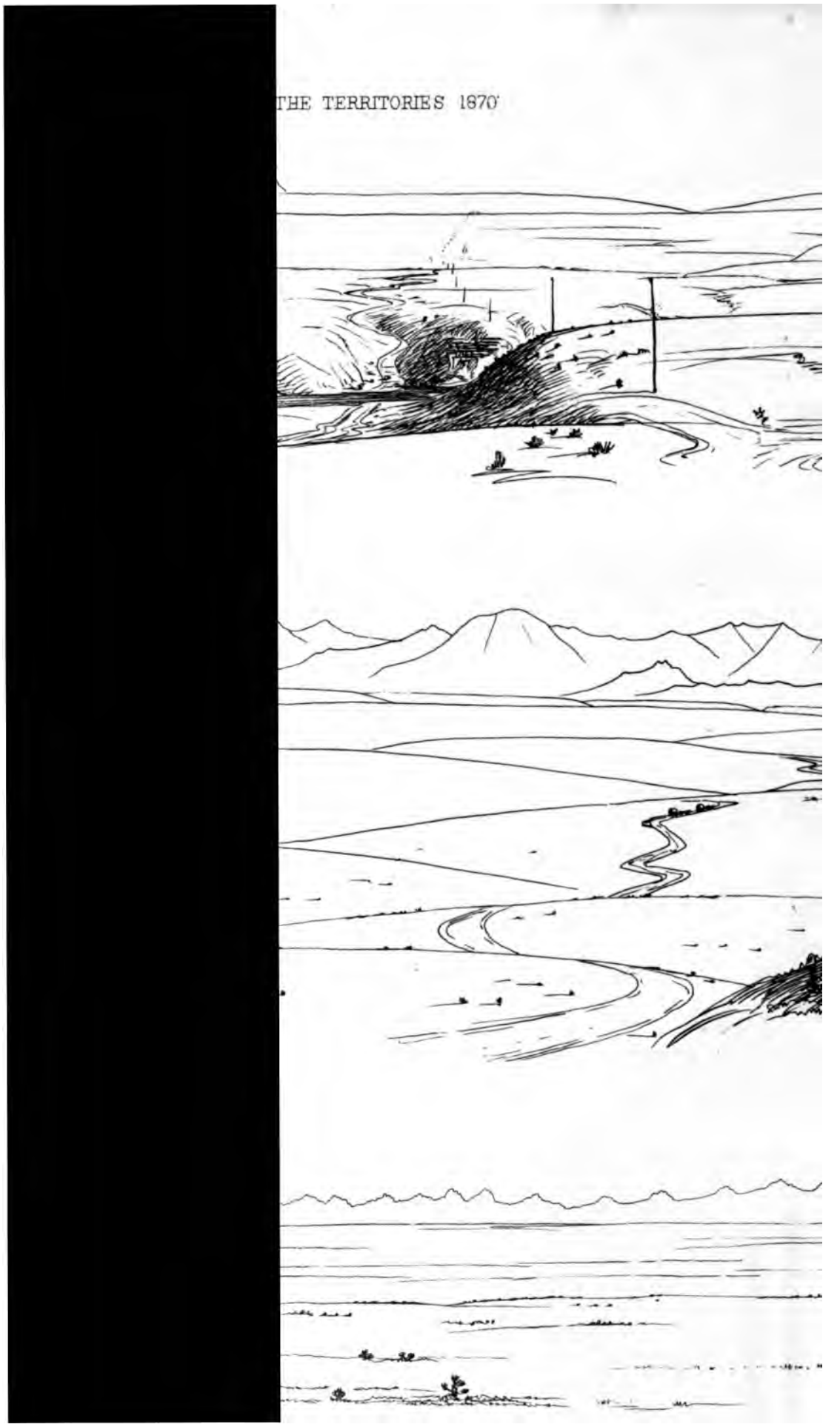
Green River

Beds to Browns Hole by way of Vermillion Creek.

SWEET
Looking East, Granite Ro
a Granite domes on Sweet Water River. b

FROM NEAR CAMP AT BIG BEND.
Three Crossings in Middle Distance, Sweetwater Mts. on Right.
a b c. d Lava & reddish basalt. c Sweetwater Mts. e great plateau of Tertiary beds & marls. Dike.

PASS AND PACIFIC SPRINGS.
Seen from the North on the South Pass City Road


THE TERRITORIES 1870

s City Road *2 Wind River Mts.* *1 Fremonts Peak.* *4 Out Crop of Granulites.*
W Direction of South Puss City

Modern Tertiary beds / Miocene / in the fore ground.

RIVER MTS. FROM CAMP ON THE LITTLE SANDY. Looking North West

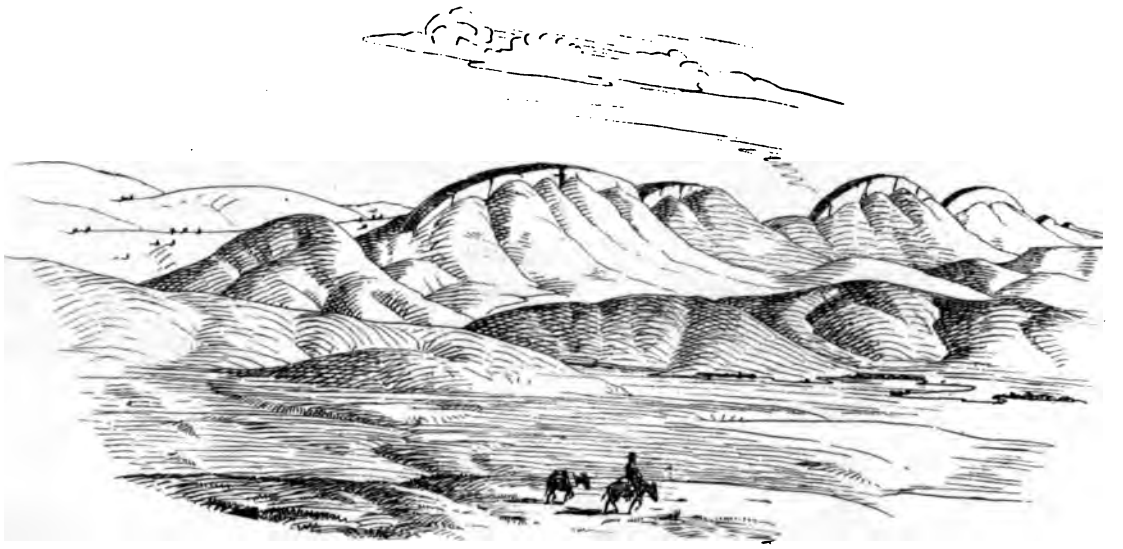
Looking

Overland Stage Road with Telegraph.

1 Lower Cretaceous. No 1. 2 Carboniferous beds

36 ON HENRY'S FORK
River or Creek, Uinta Mts. in the back ground.

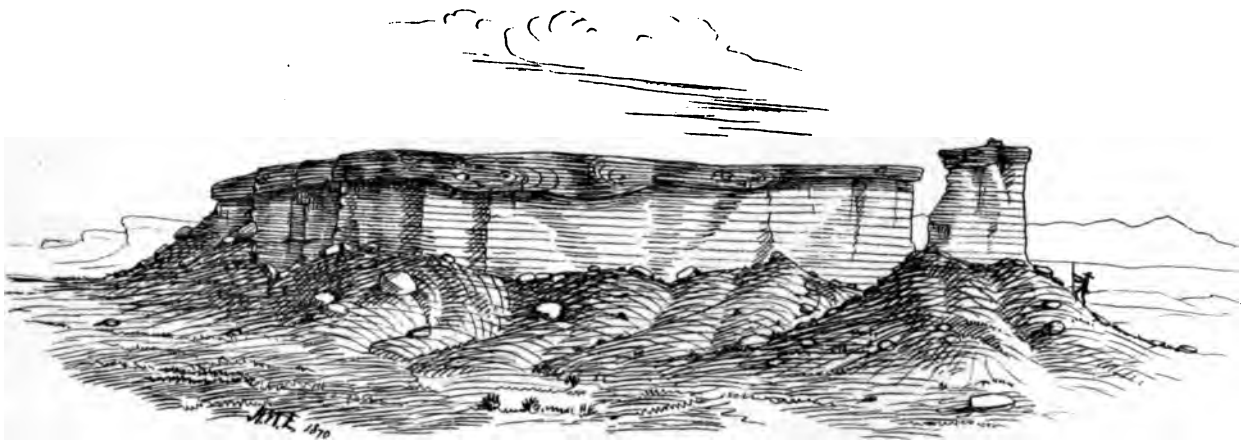
ELK MT Looking East.



Hog Backs at head of Lodge Pole & Horse Ck. Wyoming.

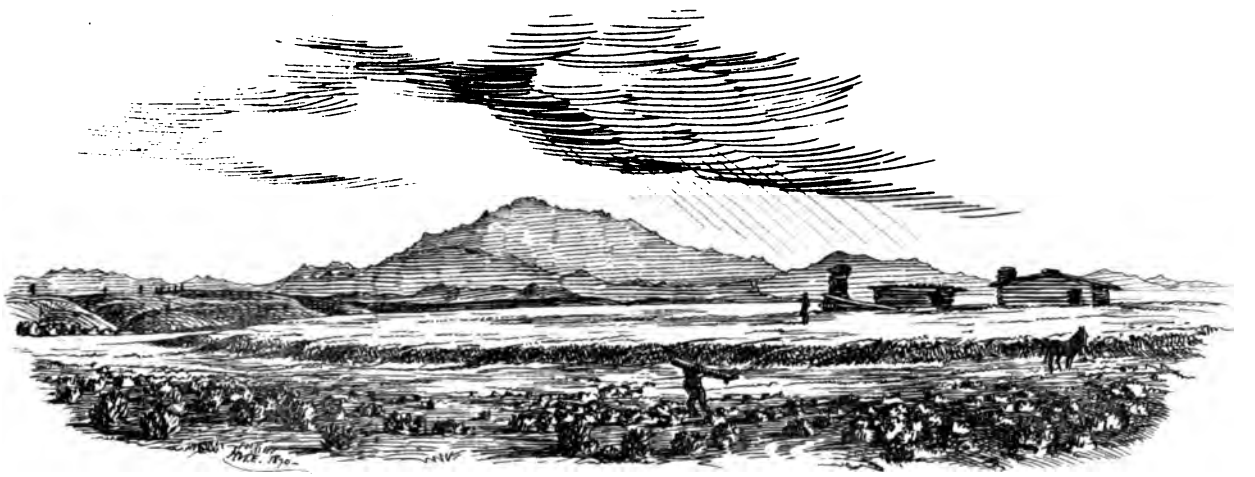
Chugwater Valley *White River Tertiary*.

Rocks on Chug - *Tertiary*.

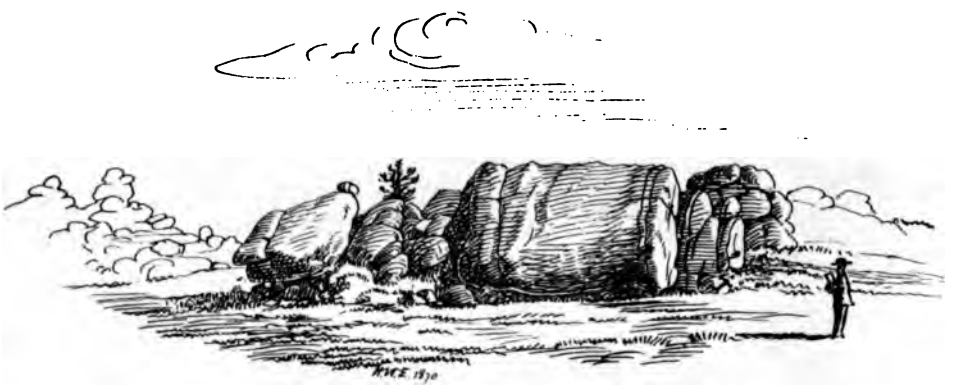


White pebbly marls overlaid with a cap of dark Sandstone Chugwater

Valley of the Chugwater Laramie Peak



Laramie Peak
from Bitter Cottonwood Crossings, White River Tertiary covered with local detritus in the foreground



Granites above spring on road to Laramie Peak

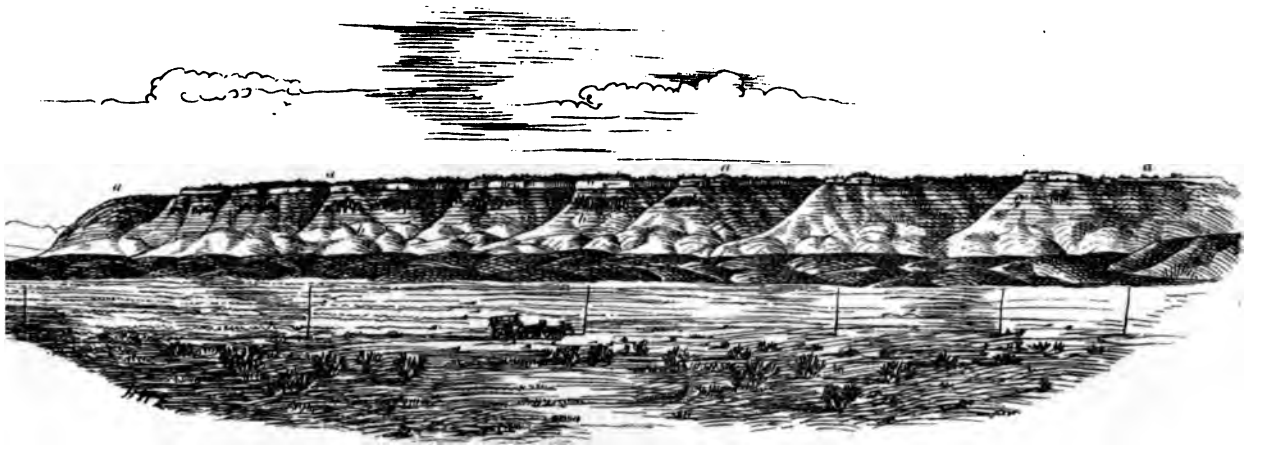
Eggshell.
Granites near Laramie Peak.

Furrowed Ridges foot of Laramie Peak Granites

Laramie Peak
with furrowed ridges & foot hills from point at head of the La Bonte, Local drift with modern Tertiary beds beneath

Carboniferous Limestone Hog Backs at head of La Prele Ck *with Red Beds & Jurassic in foreground*

La Prele Canon.
Carboniferous Limestones 1m. above Natural Bridge



Caspar Mts. North Platte R

Rounded Hills of local drift underlaid with Cretaceous.

a' Carboniferous b' Basalt

The double Diamond" at Red Buttes

a' Red Beds" Red Buttes b' Jackson Canon c' Red Beds passing up into Jurassic & Cretaceous,
d' with Carboniferous Limestones e' Platte River. f' Cretaceous.

Red Buttes.

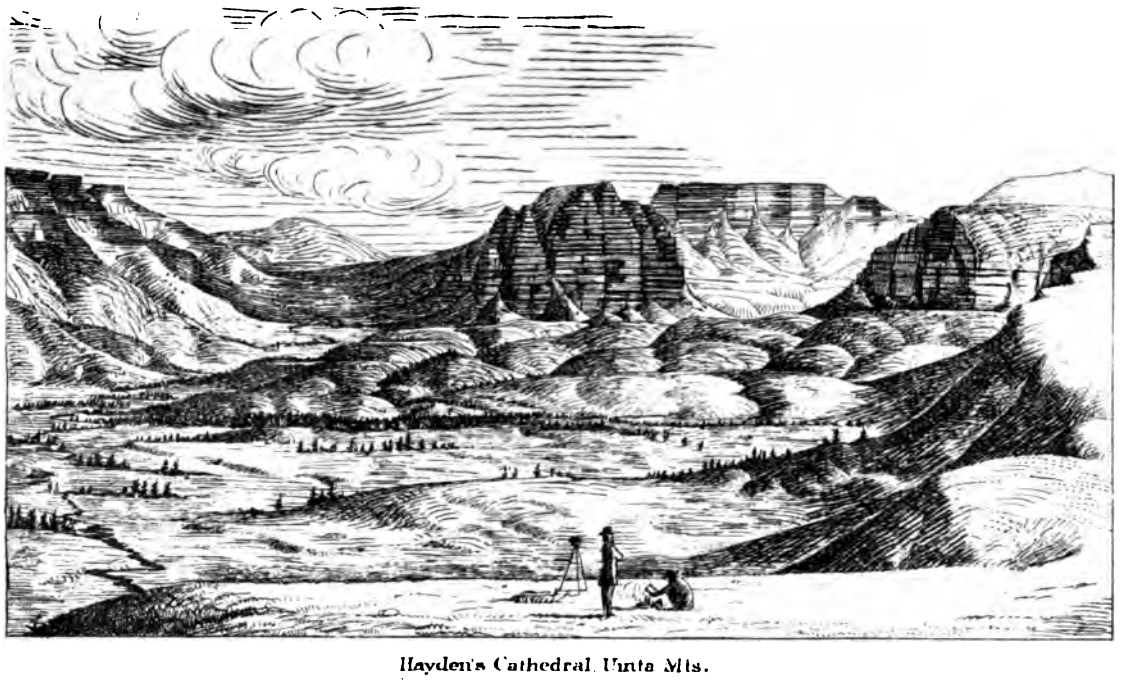
Upheaval & weathering of Red Beds and Jurassic.

"The Prussian Soldier"
Sweetwater Mts, opposite camp "Left Dome" Sweetwater River. Course aggregate of Quartz and Sandstone pebbles - white - very modern

Independence Rock, Sweetwater River
Feldspathic Granite.

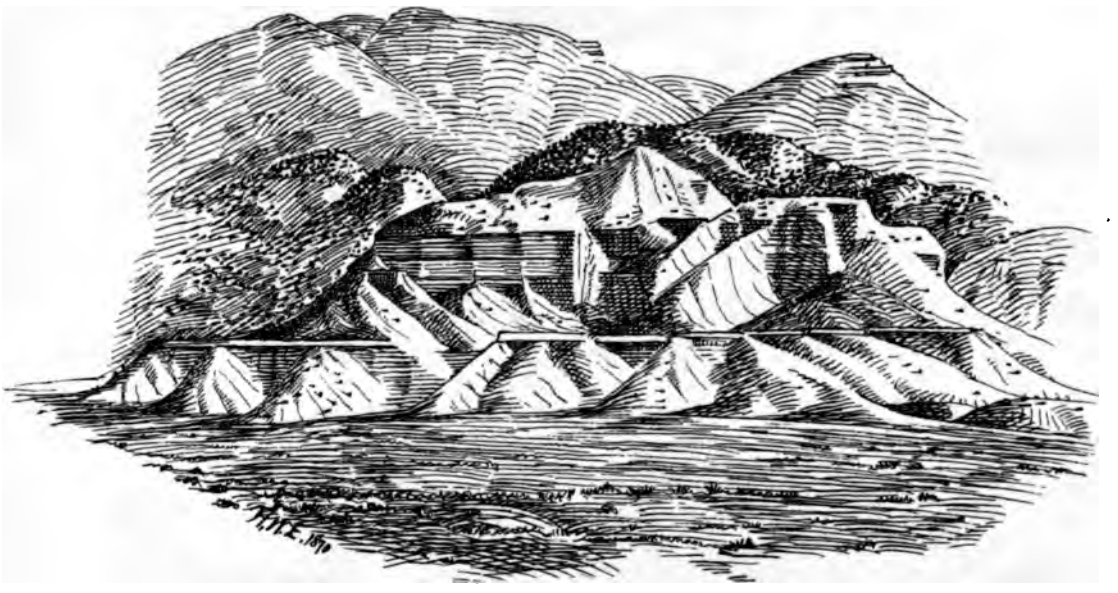
Terraces on Sweetwater Mt. Flanks *Looking South*

Carters Lake Uinta Mts. *Looking North*



Hayden's Cathedral Uinta Mts.
Looking South from Carters Plateau purplish Quartzites

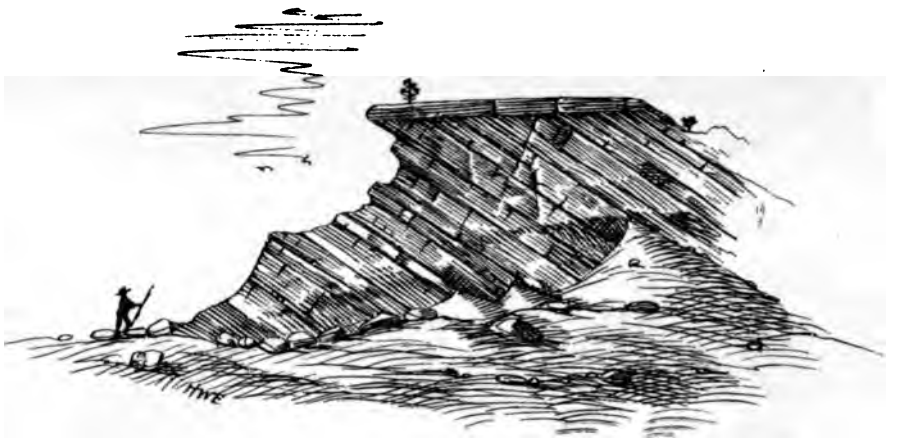
Uintas Bowers . Carters Plateau Uinta Mts.



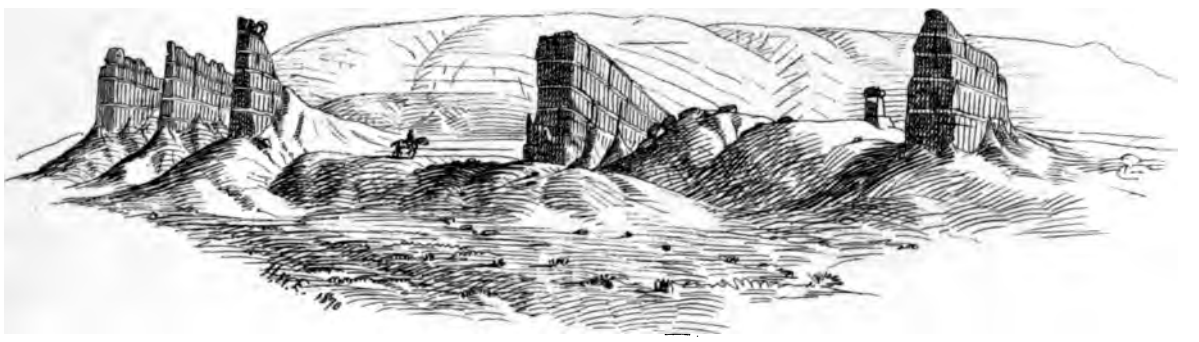
Brown Hole

Buff Marls with white horizontal sandstone seams Recent Tertiary

Gray Marls overlaid by Red Sandstones Road to Brown's Hole from Mouth of Henry's Fork - miocene

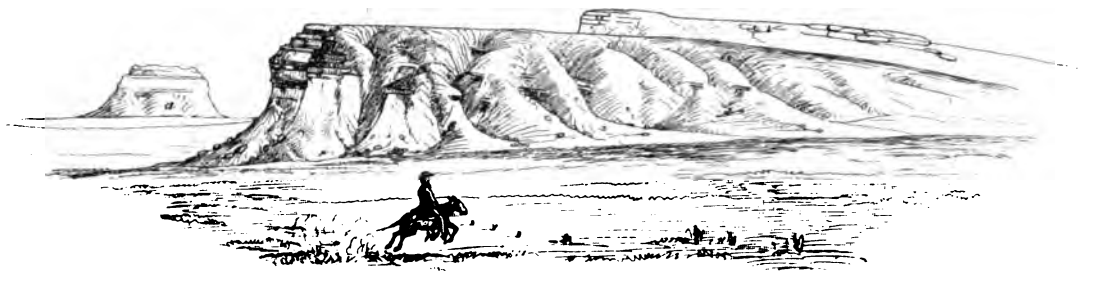


Reddish Tertiary Sandstones on Road bet Browns Hole & Green River



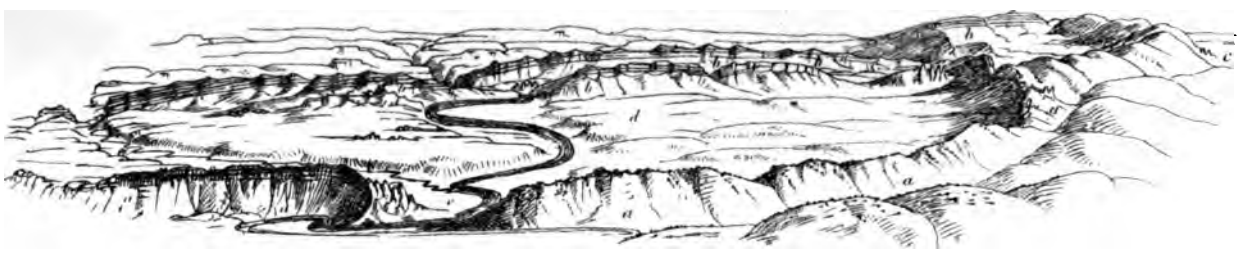
Reddish Tertiary Sandstones on Road bet Browns Hole & Green River

Upper Washakie Marls from point near Barrel Springs



Washakie Group fossils found Bitter Creek Road a Haystack Mt.

Brown *Looking South a 'Silver bearing Quartzites on Vermillion Creek b 'Red Quartzites of Uintu Mts. c 'Recent beds in the valley of the basin d 'Green River.*



Semi Qua Qua Versal & Green River. *near mouth of Henrys Fork Looking North a 'Continuation of Photo Ridge' from Uinta Mts. limestones overlaid by Sandstones Jurassic b 'Hard Reddish Sandstones Tertiary c 'Brown's Hole d 'Recent beds e 'Mouth of Henrys Fork*

a, Ogden Cañon and City.- b, Camp U.S.G.S. June 2.d to.- c, Location of supposed T

OGDEN Mts - WASATCH Mts - WEBE

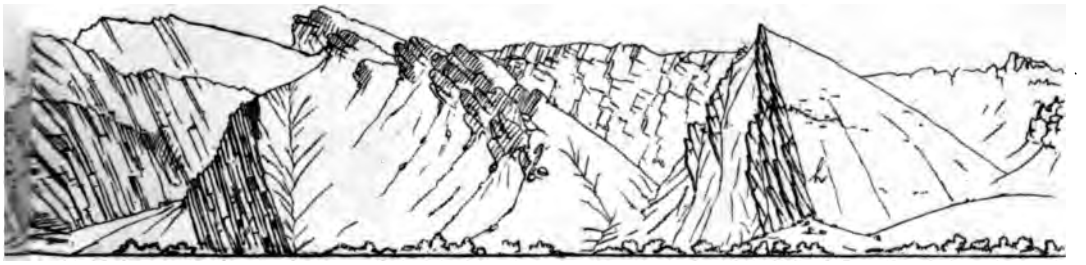
a, Salt Lake Valley.- b, Toll Gate.- c, Granites.- d, Conglomerates.- e, Rusty Q

OGDE

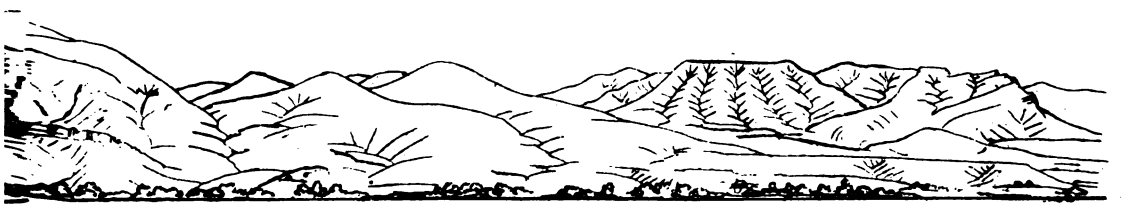
i, Limestones rusty.- j, Bluish Grayish Carboniferous Limestones (opposite L

...Mine.- d,d,d, Cooperative Farms with Brush Fences.- e, Weber Cañon.- f, Coopers Point.

...R RIVER AND VALLEY from West of Weber River.

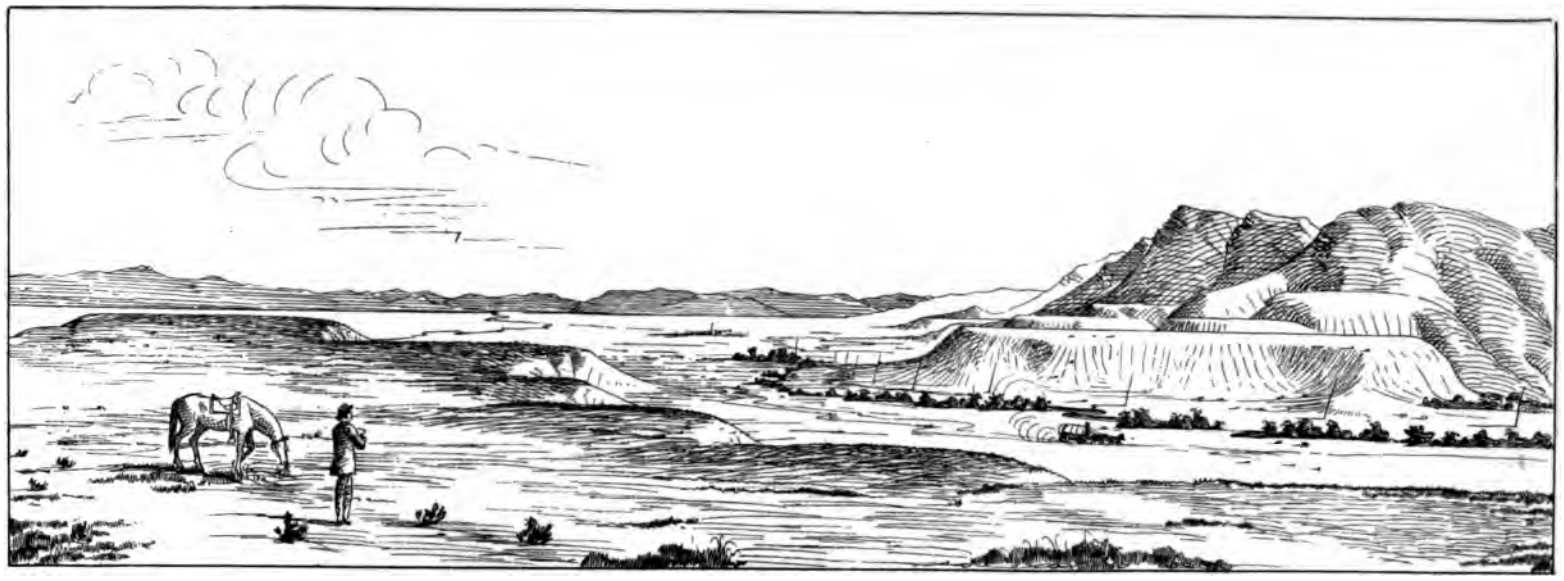


...artzites.- f, White Quartzites.- g, Blackish blue Limestones.- h, Quartzites.



...V VALLEY

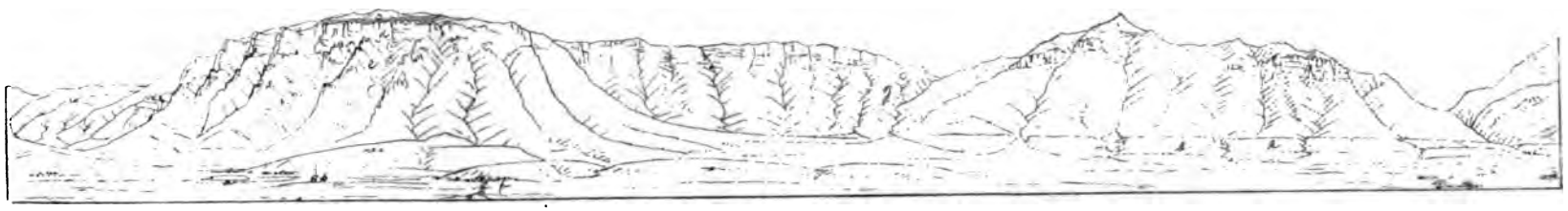
...stone Wedge) Mountains in distance.- a, Jurassic Limestones.- b, Rusty Triassic.



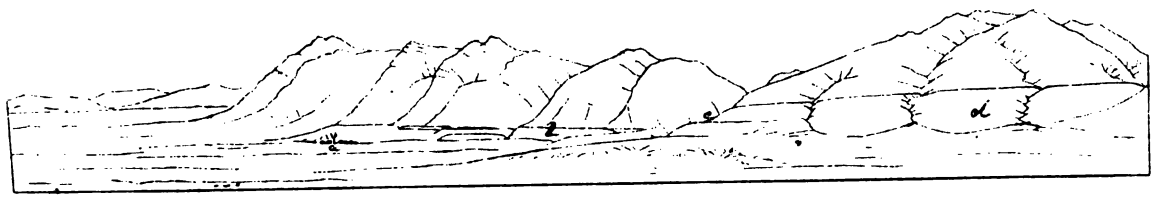
Bear River Bay and Salt Lake. Corinne Brigham City. Terraces at Mouth of Copenhagen Canon. *a, Limestone.*

Section showing the Position of the Rocks in the Mouth of Logan Canon, 3 miles - General Trend East & West

Logan.- Terraces rising out of Cache Valley.- Slide.- Rusty Gray Limestones.- Dark Limestones.- Whitish & Rusty Limestones.



a, Cold Spring.- b, Camp June 10.- c, Steel Blue Limestones.- d, Quartzites White.- e, Limestones (bluish black.- f, Hot Springs, Iron.- g, Ogden Hole.- h, Grassy benches or terraces mostly under cultivation.- Ogden Cañon City.

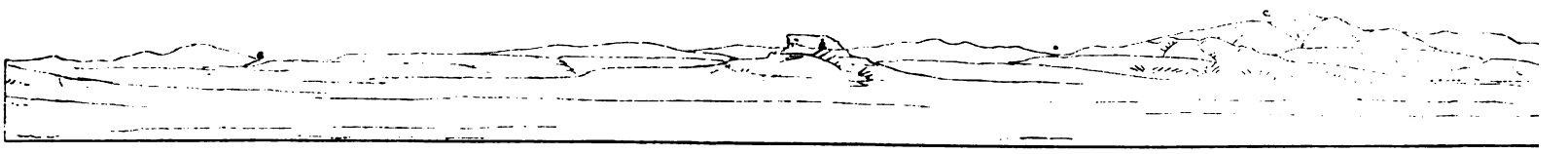


a, Brigham City.- b, Creek Terraces.- c, Box Elder Cañon.- d, Old Lake Terrace lines oblique.

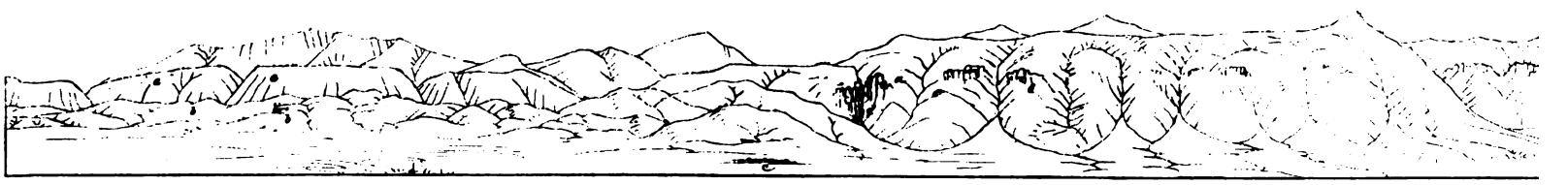
COPENHAGEN CAÑON (BRIGHAM CITY) TO THREE BUTTES, SNAKE RIVER.

a, Brigham City Entrance to Cañon.- b, Argillaceous brown sandstones.- c, White quartzites.- d, Gray & yellowish white limestones.- e, Copenhagen.- f, Camp June 12.

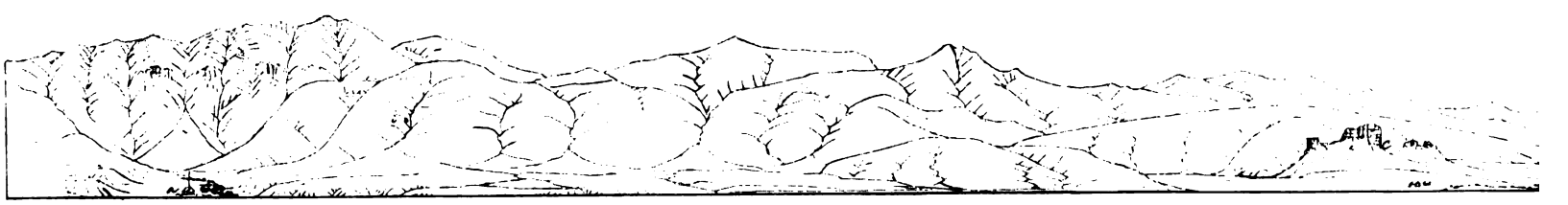
Foot Hills.- a a, Brown rusty sandstones.- b b b, M.ns white quartzites and limestones of dark bluish gray color.- c, Little Sheep Lake and Ranche.- June 13.
d, Foot Hills rusty brown argillaceous sandstones.- e Camp June 13.- f, Wellsville.- Mountains white quartzites, blueish limestones, and rusty reddish beds at base.



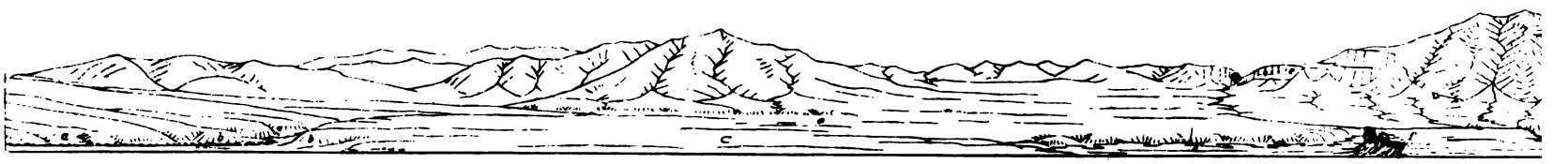
a, Opening towards Corinne.- b, Basalt, opposite Franklin.- c, Milnde Divide.



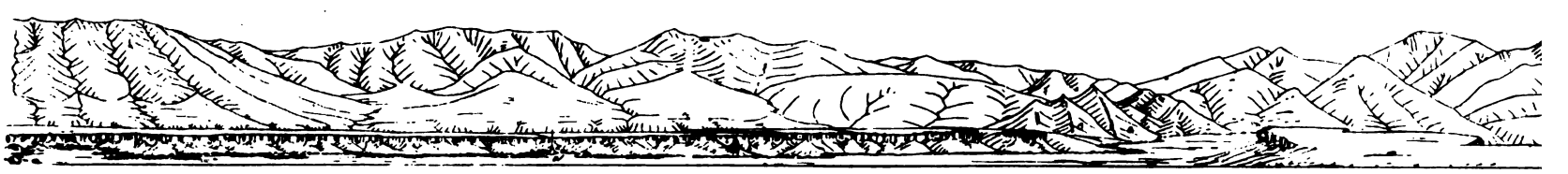
a a, Limestones and Quartzites on summit, dark looking igneous rocks.- b b, Pliocene beds.- Road crossing Bear River.- c, Clifton.- d d, Basaltic Quartzites.- e, Oxford.



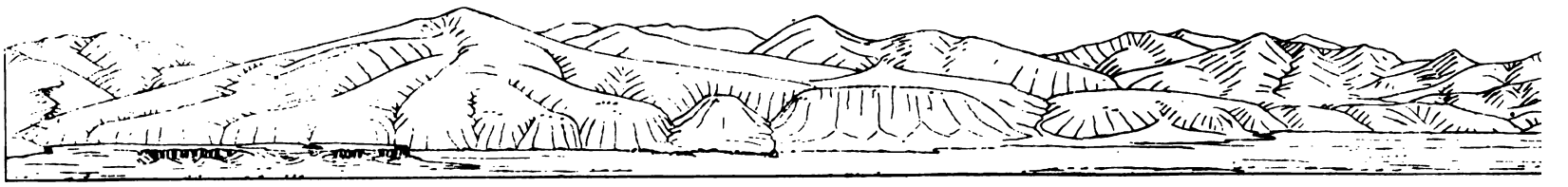
a, Camp June 16.- b, Oxford mines. White Quartzites on summit. Rusty brown Quartzites below, visited by Peale June 17.- c, Reddish limestones.- Red Rock Ranche.



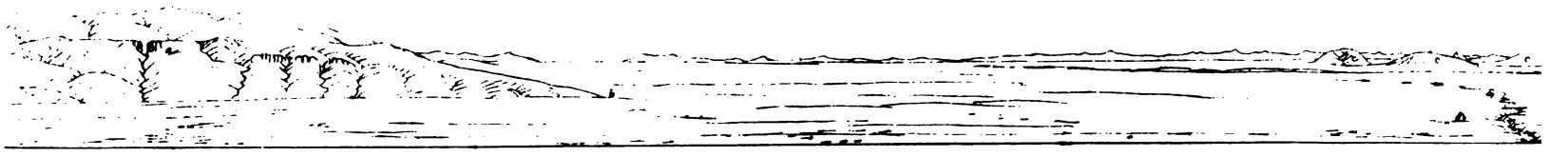
a, Marsh Creek.- bb, Terraces bordering Marsh Creek. Post pliocene.- c, Marsh Valley.- d, Camp June 17. Carpenters or Wadsons.- Junction of Corinne and Cache Valley Roads.- e, Gray Quartzite walls.- f, Basalt overflow in valley commences.



Basalt overflow in valley. Port Neuf River. Mt.s red and white Quartzites. Terraces running down to lava. a, Camp June 18.- b, Cherty limestones underlying lava bed Exposed here to view.- cc, Quartzite dikes and vertical strata. White Quartzites in distant Mts Red Quartzites in front hills.



Lava bed. Red Quartzite terraces. Camp June 19

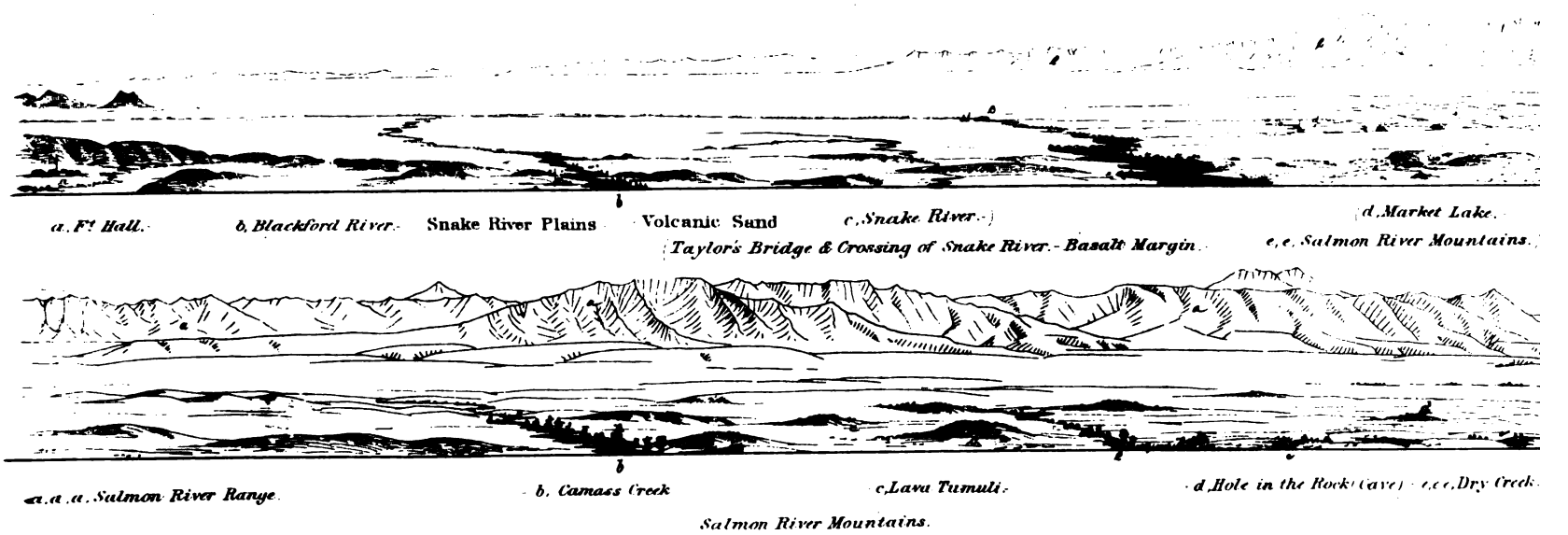


a, Basaltic columnar joints.- b, Port Neuf River flows to the westward to Snake.- Snake River Valley.- c, Three Buttes. Camp June 19 Ross Fox.

FROM Ft HALL TO BOZEMAN CITY.

Looking East.

(generally)



a, Ft Hall. *b, Blackford River.* Snake River Plains Volcanic Sand *c, Snake River.* *d, Market Lake.*

Taylor's Bridge & Crossing of Snake River. *Basalt Margin.* *e, e. Salmon River Mountains.*

a, a, a. Salmon River Range. *b. Camass Creek* *c, Lava Tumuli.* *d, Hole in the Rock (cave)* *e, e, e, Dry Creek.*

Salmon River Mountains.

b, b, Camp June 27. (Dry Creek) *Medicine Lodge Pass.* *c, c, c, Basaltic Hills.*

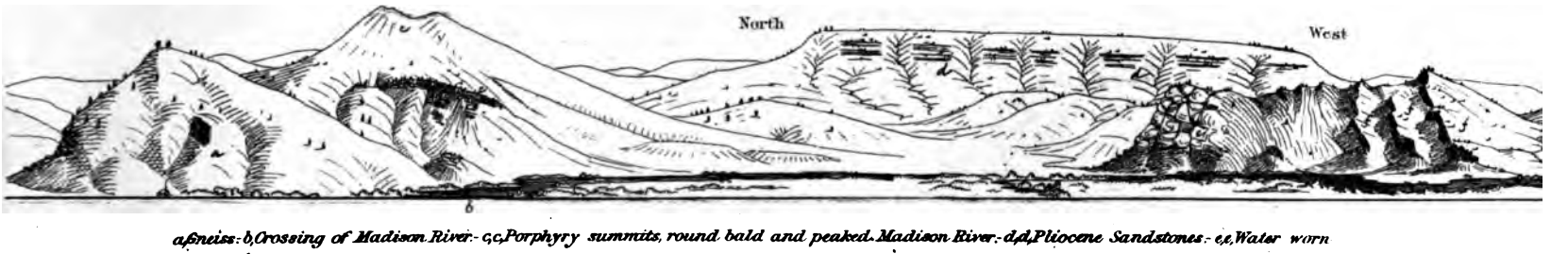
a, Basaltic Hills. *b, b, b, Probably some Lignite Beds* *c, Pleasant Valley.* *d, d, Reddish and gray Quartzites.* *e, e. Tertiary Terraces.*

a, a, Hills on horizon of reddish brown Quartzites, stratified. *b, Wall of white Sandstone.* *c, Pinkish gray Sand Quartzites on top, Red and Gray stratified Conglomerates below Foot Hills white Sandstones, Conglomerates, Limestones &c.* *d, Gray Conglomerates Corals found* *e, Junction Camp, June 29 & 30. Valley of Willow Cr. Terraces, modern Tertiary.* *f, f. Hills of Limestones resting upon Quartzites.* *g. Mountain on Salmon River. White Conglomerates* *h, h. Crossing Red Rock Creek. Cañon of white Conglomerates capped with Basalt &c.* *i. Mt on West side Red Rock Valley*

West

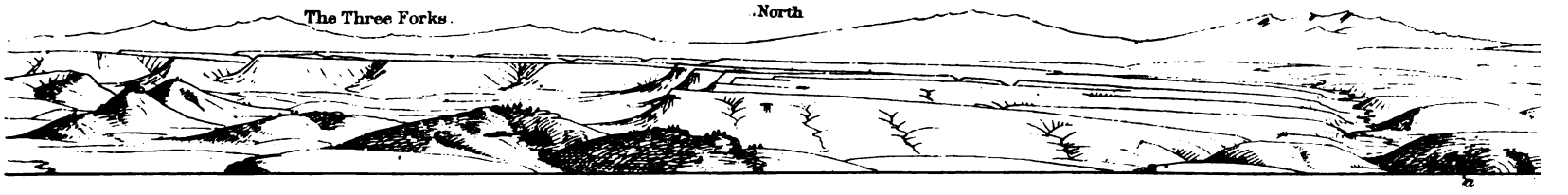
a, Meadow Creek.- b,b,b, Granites, Syenites, Gneiss and white Quartz cropping out.

Camp July 7.- A, Hot Springs.- a,a, Rounded Granite Hills. Basalt Peaks in distance.- B, Basalt Cap upon Gneiss Granite &c. Granite and Gneissish Hills with Porphyries.- C, Coarse Conglomerates and red Beds.- D, Arastras, crushing Ore.

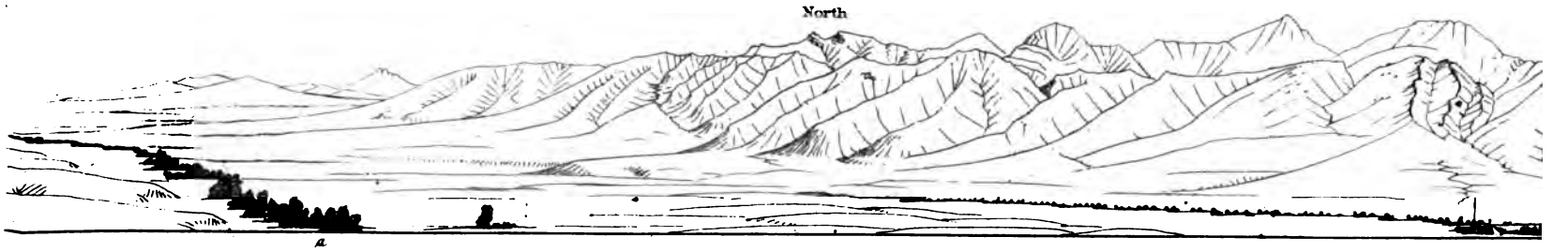


a, Gneiss.- b, Crossing of Madison River.- c,c, Porphyry summits, round bald and peaked. Madison River.- d,d, Pliocene Sandstones.- e,e, Water worn Gneiss and rusty.- f,f, drab Granites with protrusions of trap and irregular seams of Quartz.

a,a, Rusty and gray Gneiss &c.- b,b, Pliocene Beds in distance. Divide between Jefferson and Madison. Madison River runs off to the North: 25 Miles to its combination with the Gallatin and Jefferson in forming the Missouri.- Dykes rusty gray Gneiss &c.



Divide between Madison and Gallatin. Great Basin of recent beds. Pliocene white Sandstone.- a, White Sandstone and Conglomerate.



a, Gallatin Crossing.- Valley Looking West.- Bridger Butte Range.- Pinkish Limestones and Quartzites.- "Bozeman".- East Fork of Gallatin River.

PANORAMIC PROFILE
FROM THE THREE FORKS OF THE MISSOURI
TO THE
SNAKE RIVER PLAINS

Crow Creek Valley and gold mines Jefferson River and bottom a Cañon just below junction of Three Forks Gallatin City Madison River

Mens Ranche Pliocene beds Basalt and Carboniferous Limestones

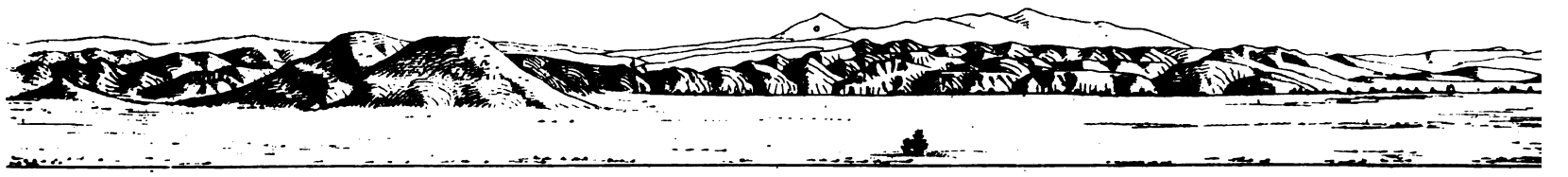
a Jefferson Cañon-Limestones Willow Creek. a' Limestone ridges.

The Island Jefferson River North Boulder Creek. Quartzites. Cañon of Limestones Head of Jefferson Cañon about 8 miles through to point opposite Willow Creek

a White Earl Creek b Stage Station c Gray Rusty Limestones d Jefferson River e dark Quartzites f Recent gray marls g Islands.

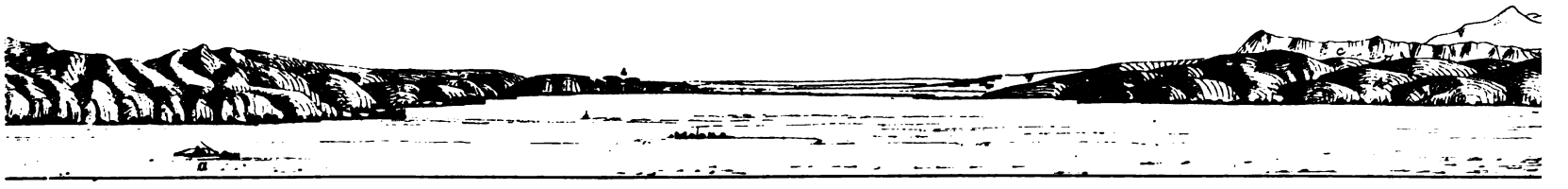
b Parson's Bridge. Jefferson River. c Fish Creek. d Recent Beds Pipe Creek

a a Twin Bridges. Beaver Head Fork of the Jefferson. b Iron Rod Lode. c Silver Star mining town. Hell Canon d Green and Camel Lode. soil whitish & gray alluvium very dusty Rolling granite h



a Limestones rusty grey b Mouth of Canon of the Big Hole River. Low rolling limestone bluffs c Bald Mt of Shonborn Level Plain of white alluvium

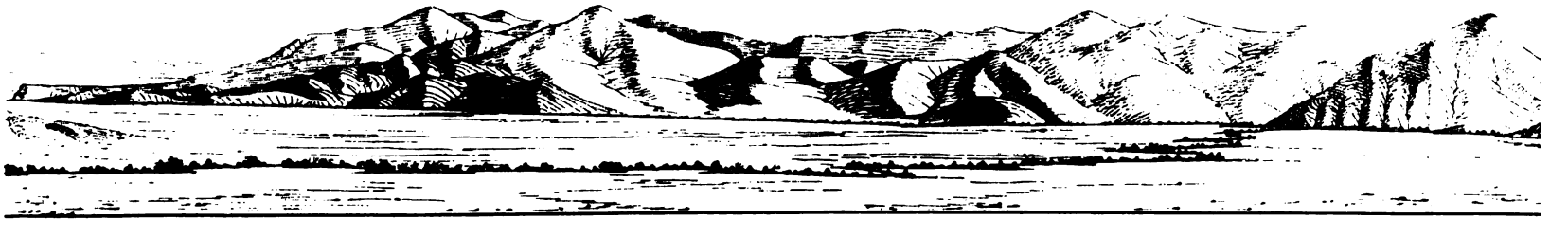
a Sandstones brown & rusty b Limestones underlying. c Ranche c Beaver Head Rock and bridge Limestones d Coarse gritty Sandstones overlying Limestones



a Well sweep Ranche. b White Carboniferous Limestones c Ridge of Reddish Quartzites d Limestone and Sandstone Hills.

a Masses of White Sandstones / Tertiary / old Hot Spring deposits resting on the quartzite ledges. b Mouth of Beaver Head Canon Trachyte Rocks.
c Ryans Bridge. Low Rolling Miocene terrace. e Brown porphyry bluffs.

Mountains capped with Quartzites and basalt. Limestones on Mountain top. Modern benches.



High rolling Hills of Carb Limestone and Quartzites. Sage Creek, Horse Prairie Creek.

Milltins Ranche. a Carb. limestone with occasional quartzite Cap. b Ferruginous granite, c Carb limestones overlaid by White Sandstones, d Red Rock Creek e Stage Station.

a White limestones. b Pink beds c Red beds d Reddish porphyrys and porphyrys Slates, e Sandstone ridges. Course grained bluff of Sandstone

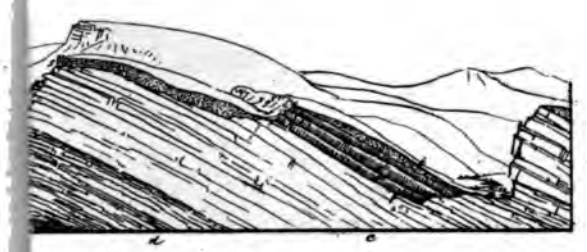
a Sandstones course gravel grained. b White Sandstones, c Red porphyrys over d Limestones and Sandstones.

Ridges of gray and brown quartzites resting over modern tertiary terraces. Mountains with light reddish quartzite summits. gneiss foot hills and modern tertiary benches and terraces. Summits bare and composed of pinkish quartzite drift.

a' Terraces b' Salmon River Mts. pinkish gray quartzites. Butte of gray quartzites over the valley. Dividing Ridge of dark brown quartzites. with other igneous outbursts

a' Medicine Lodge Creek. The road turns here abruptly with the stream to the East coming out at Dry Creek Snake River Plains on the Stage road taken by us in June and July. b' Main Divide. Cretaceous beds resting upon the metamorphic with basaltic overflow here and there with limestone layers & soda carbonates of old hot spring deposition. c' Sandstones. Salmon River Mts on horizon pinkish drab quartzites. d' Branch of Red Rock Creek. Cretaceous terraces. e' Branch of Red Rock Creek and Camp.

nd Medicine Lodge River (Pacific) taken two

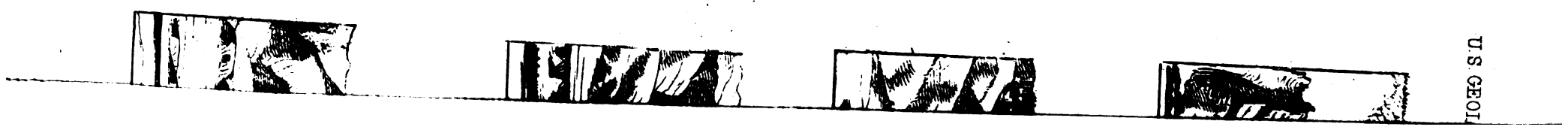


reous limestones.- d, Quartzites brown & gray
ts of Salmon River Mts.- Red Rock Creek.

1, Old Hot Spring Vats - Bear River.- 2, Hills of Carboniferous Rocks.- Mostly Carbonate of Lime.

nd.

stratified sandstone, red.-



U S GEOL

ECLOGU

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